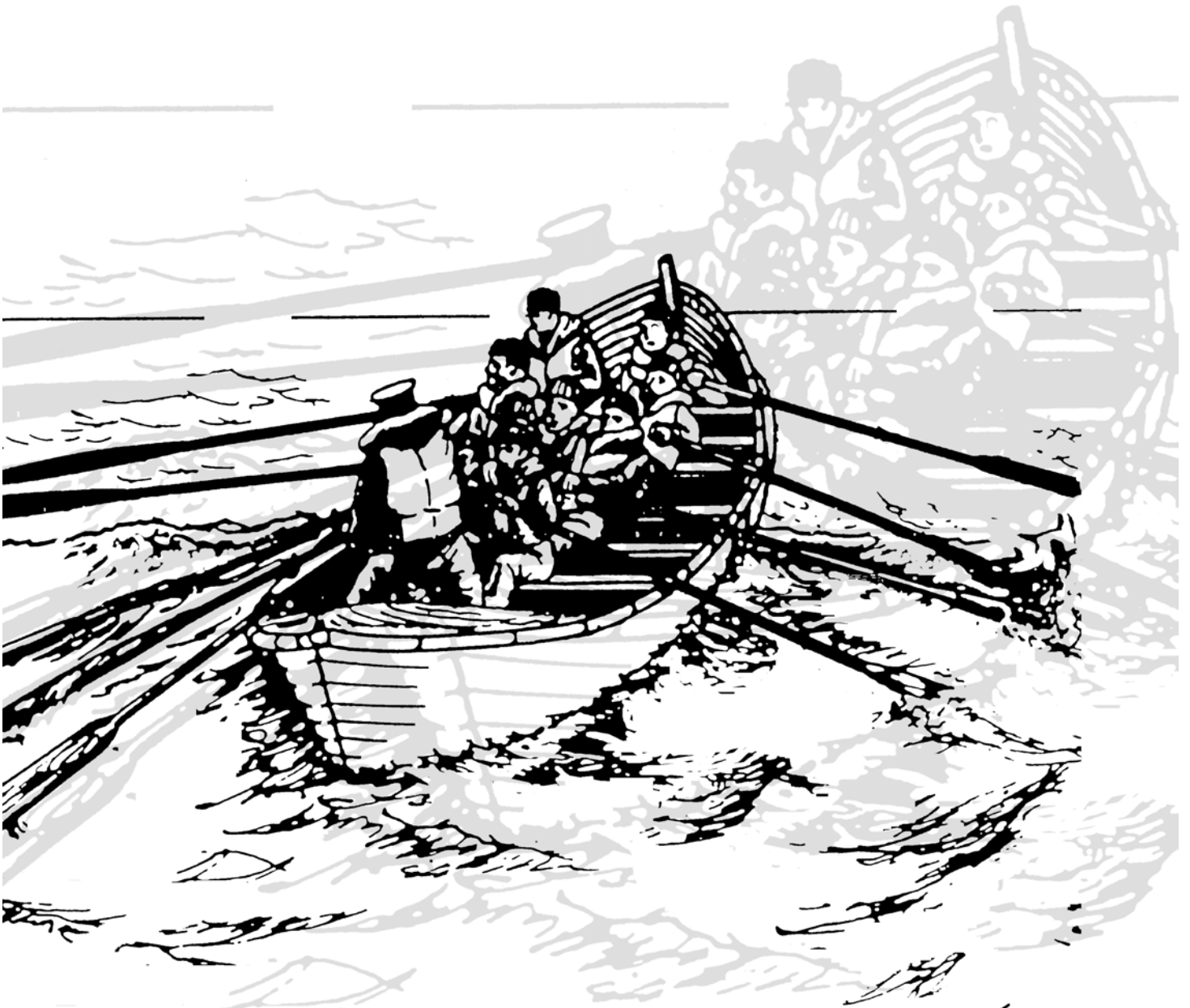


# BOAT CREW Qualification Guide

## Vol. III - Engineer COMDTINST M16114.6B

“Train, Maintain, Operate”



U.S. Department  
of Transportation

United States  
Coast Guard





## RECORD OF CHANGES

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## Chapter 1 Introduction

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### Introduction

The Boat Crew Qualification Guides are an integral part of the boat crew qualification and certification process. Each volume contains a collection of tasks which must be learned, practiced, and performed by the trainee. These tasks represent the minimum elements of skill and knowledge necessary for safe and effective performance of a U.S. Coast Guard engineer.

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### In this chapter

This chapter contains the following sections:

Section	Title	See Page
A	Steps in the Qualification and Certification Process	1-3
B	Description of the Manual	1-5
C	Instructor Guidance	1-11
D	Trainee Guidance	1-15
E	Boat Types	1-17
F	Task List for Engineer	1-21

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## Section A. Steps in the Qualification and Certification Process

### Introduction

This section will explain the qualification/certification system requirements and procedures that the trainee should understand before completing specific tasks.

### A.1. Designation to the training program

The trainee is designated to the training program by the unit command.

### A.2. Assignment of primary instructor

An experienced and certified petty officer is assigned as the trainee's primary instructor.

### A.3. Completion of appropriate qualification guide

The trainee completes the appropriate qualification guide. To accomplish this, he/she must follow the procedure below:

Step	Procedure
1	Trainee is assigned task.
2	Trainee completes reading assignment.
3	Task is demonstrated to trainee.
4	Trainee is walked through task.
5	Trainee practices task.
6	Trainee demonstrates proficiency in task up to task standard.
7	Task is signed off.

### A.4. Certification process

Upon completion of the qualification process, the trainee completes the certification process as outlined in the steps below:

Step	Procedure
1	Boat Crew Examination Board interviews trainee.
2	Trainee completes a comprehensive check ride.
3	Boat Crew Examination Board issues recommendation to the command.
4	Command certifies trainee.

### NOTE

For a complete discussion of the qualification/certification process, refer to *Boat Crew Training Manual*, COMDTINST M16114.9 (series).





## Section B. Description of the Manual

---

### Introduction

This manual is *Volume III* of the *Boat Crew Qualification Guide*. There are five manuals making up the guide. They are:

- *Volume I* - *Boat Crew Member*
- *Volume II* - *Coxswain*
- *Volume III* - *Engineer*
- *Volume IV* - *Heavy Weather Coxswain*
- *Volume V* - *Surfman*

Each volume is made up of three major chapters:

- *Chapter 1* - *Introduction*
- *Chapter 2* - *Qualification Tasks*
- *Chapter 3* - *Trainee Study Guide*

*Chapter 1* consists of:

- Explanations of the qualification/certification system
- Descriptions of the qualification manuals
- Guidance concerning the responsibility of the instructor and the trainee while using the qualification guides

*Chapter 2* is made up of the qualification tasks, which are designed to measure the trainee's progress.

*Chapter 3* provides guidance for the trainee's reading assignments and is to be removed and retained by the trainee.

### In this section

This section contains the following two parts:

Topic	See Page
Sample Task	1-6
Description of Tasks	1-7

---



## Sample Task

**TASK ENG-01-33-TYPE**

**Identify the Breaker Panels**

**References**

a. *41' UTB Operator's Handbook*, COMDTINST M16114.2 (series)

**Conditions**

Task should be performed at any time aboard any of the unit's standard boats without the use of reference or prompting.

**Standards**

In response to the instructor, the trainee must, without error, identify different parts of the electrical panels.

Performance Criteria	Completed (Initials)
1. Identify AC breaker panel.	<u>IMU</u>
2. Identify DC breaker panel.	<u>IMU</u>
3. Identify shore-tie.	<u>IMU</u>

**Instructor**

MK2 I. M. UNDERWAY

**Date**

25 OCT 99

**Comments**



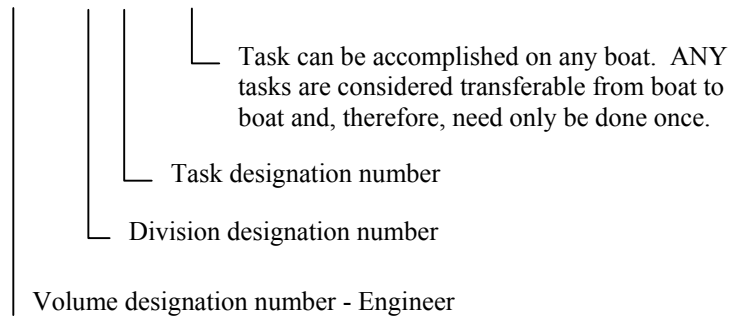
## Description of Tasks

### B.1. Task designation

Tasks are identified by designation. Below are two examples with explanations of the qualification task designations:

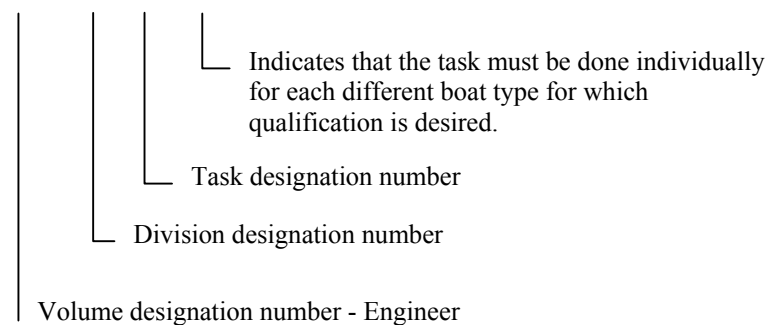
#### B.1.a. Example 1

ENG-02-03-ANY



#### B.1.b. Example 2

ENG-02-03-TYPE



### B.2. Task

The knowledge or skill objective to be performed.

### B.3. Reference

Information sources used by the trainee and instructor to obtain the background necessary to enhance task performance.

### B.4. Conditions

The conditions are the environmental and physical circumstances under which the tasks must be performed. Any tools or special equipment needed for the completion of the task are listed here. The conditions listed with each task must be met. The following definitions describe the terms found in the conditions and standards:

#### B.4.a. Heavy weather

Heavy weather is defined as seas and swell conditions combining to exceed 8 feet and/or the winds exceeding 30 knots.

**B.4.b. Rough bar**

A rough bar is a river entrance or inlet where heavy seas or surf conditions exist, and/or whenever there is doubt in the judgment of the coxswain or the Commanding Officer/Officer-in-Charge.

**B.4.c. Surf**

The waves or swell of the sea breaking on the shore or a reef is defined as surf.

**B.4.d. Boat operations**

<b>Term</b>	<b>Definition</b>
Slow	Underway and moving ahead at clutch speed or slower
Underway	Not tied to a pier or float and not anchored or moored

**B.4.e. Visibility**

<b>Term</b>	<b>Definition</b>
Restricted	Visibility less than ¼ mile
Clear	All other states of visibility

**B.4.f. Sea conditions**

<b>Term</b>	<b>Definition</b>
Calm	Seas less than 4 feet
Moderate	Seas 4 to 8 feet
Heavy	Seas greater than 8 feet
Surf	Waves or swell of the sea breaking on the shore or a reef

**NOTE**

During the period a member is qualifying, the minimum sea conditions are just that, minimums. This qualifying period should include demonstration of skills during wind and sea conditions appropriate for the area. The unit commander should consider maximum weather limitations in conjunction with Commandant policies to ensure trainees build confidence and platform proficiency gradually. The trainee must practice in varied conditions within the above ranges and not just the minimums prior to certification.

**B.5. Standards**

Standards describe the expected outcome of the task. Successful task completion is a function of how well a student is able to complete the task without assistance. Generally the task performance standards are as follows:

**B.5.a. Knowledge tasks**

Trainee must be able to cite, from memory, the required information. Instructors may wish to ask questions concerning particular steps for accomplishment in order to measure the trainee's total comprehension of the subject matter.

**B.5.b. Skill tasks**

Trainee must be able to perform all performance tasks without prompting or assistance from the instructor. Each task demonstration must follow the correct sequence with little or no hesitation between the steps for accomplishment.


**B.6. Performance criteria**

These steps delineate the procedure that is best followed for performing each task. They can be utilized two basic ways:

- Aid in learning the task.
- Serve as a performance check.

**B.6.a. Aid in learning the task**

Some steps for task accomplishment follow exact procedures which are required for performing a particular operation or using a specific piece of equipment, while others serve as general guidelines for task completion.

**B.6.b. Serve as a performance check**

Some task steps can serve as a performance checkoff which can be used by the instructor to measure trainee performance when the trainee performs the task.

**B.7. Accomplished**

The designated instructor must print his/her name and rate, sign and date this line attesting that the trainee successfully performed the task in accordance with the prescribed standards.

**B.8. Comments**

The comment section can be used to describe circumstances or conditions which might have a bearing on task completion. Failure to perform any element or unsatisfactory performance of an individual element should be noted in the comments section for the task. If the task is completed under more arduous circumstances than those described, a notation should be made.

**NOTE**


*Appendix A* provides a list of all tasks in this instruction with space for the instructor to initial and date when each task has been completed.

**NOTE**


*Chapter 3* lists reading assignments for each division followed by a group of questions that should be used by the trainee as a study guide.





## Section C. Instructor Guidance

---

### Introduction

An instructor must be thoroughly familiar with the boat crew training process. Intimate knowledge of the contents of the following manuals is a must prior to commencing training.

- *Boat Crew Training Manual*, COMDTINST M16114.9 (series)
  - *Boat Crew Seamanship Manual*, COMDTINST M16114.5 (series)
  - Operator's Handbook (Type Specific)
  - *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)
- 

### C.1. Duties

The instructor's duties include:

- Guiding the trainee through the qualification process in accordance with the instructions in *Chapter 1* of each qualification guide
  - Teaching skills to trainees
  - Observing trainee skill development during operations and training, while ensuring that established conditions and standards are met
  - Certification recommendation to unit command upon completion of qualification process
  - Maintaining own proficiency training and technical knowledge
- 

### C.2. Guiding the trainee through the process

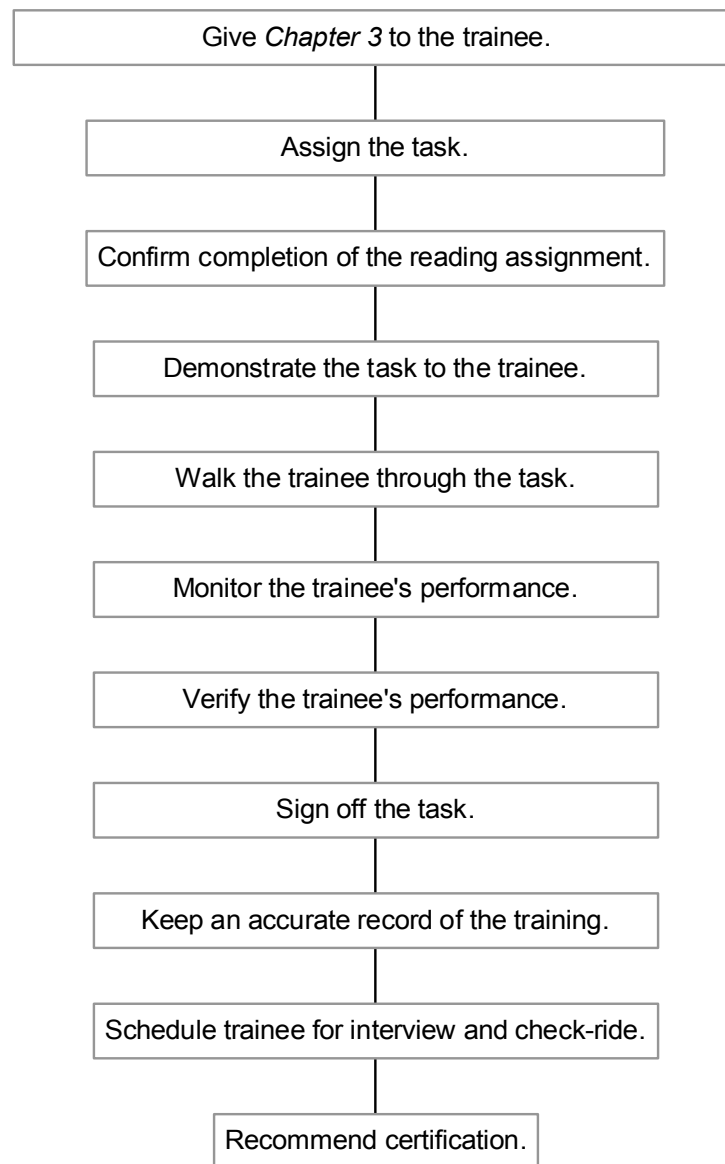
Tasks are meant to be learned through constant practice under the instructor's guidance. This is accomplished by following the procedural steps listed below and provided in **figure 1-1**.

---

#### C.2.a. Give Chapter 3 to the trainee

Give the trainee the reading assignment and study guide questions. Remove *Chapter 3* from the manual and give it to the trainee to retain.

---



**Figure 1-1**  
**Procedures for Guiding Trainees**



C.2.b. Assign the task

While divisions may at times be done concurrently, the tasks within each division should normally be accomplished in consecutive order.

- Which tasks must be completed depends on the crew position and type of boat for which the trainee is being qualified. Those tasks which must be accomplished to qualify for each particular boat type are listed in *Section E* of this chapter.
- Tasks designated as TYPE are considered to be specific to each boat type. These must be completed individually for each desired boat type qualification.
- Tasks designated as ANY are considered general in nature. Completion of these tasks on any boat type is sufficient for the qualification process and need not be repeated when qualification is desired on another boat type.

C.2.c. Confirm completion of the reading assignment

Care should be taken at this point to clarify any misunderstandings the trainee might have about the material.

C.2.d. Demonstrate the task to the trainee

Demonstrate the steps required to complete the task. During the demonstration, the instructor should narrate the procedures. If the task is one of the few that does not require demonstration, proceed to the next step.

C.2.e. Walk the trainee through the task

In order to ensure that the trainee understands, the instructor may want to walk the trainee through the steps more than once. There is no limit to the number of times the instructor performs the walk-through, however, trainee understanding must be ensured before continuing.

C.2.f. Monitor the trainee's performance

Trainee performance should be monitored during both training and operations. Qualification does not end with the first successful completion of the task. It is an ongoing process that ends only when successful task completion can be met consistently.



C.2.g. Verify the trainee's performance

Verify that the trainee's performance meets the standard. This includes two parts:

- The trainee must be able to perform the task subject to established conditions and standards delineated for the task.
- The trainee must be able to perform the task with no assistance.

The trainee is expected to perform each task on a consistent basis in accordance with the established standards and conditions.

C.2.h. Sign off the task

The instructor signs the task at the bottom of the page when he/she is confident that the trainee can perform the task consistently, while unsupervised.

C.2.i. Keep an accurate record of the training

The instructor must ensure that all task completions are documented in this manual.

**NOTE** 

As a quick reference of the trainee's progress, the instructor should maintain the task accomplishment record located in *Appendix A*. This is accomplished by entering the start date as each task is assigned and then initialing and entering the completion date as each task is completed.

C.2.j. Schedule trainee for interview and check-ride

Inform the unit commander when all tasks in this manual are completed. When the trainee has completed all of the required tasks for the position and boat type, the qualification process is done. The instructor should inform the Boat Crew Examination Board and schedule the trainee for an interview and certification check-ride.

C.2.k. Recommend certification

When the Boat Crew Examination Board is satisfied with the trainee's performance and abilities, they may recommend to the unit commander that the trainee be certified.

**C.3. Proficiency maintenance and technical knowledge**

It is imperative that a very high level of professionalism be maintained among all unit instructors. All instructors must ensure that their certification remains current. In addition, instructors must ensure that they retain their proficiency with all installed boat equipment.



## Section D. Trainee Guidance

---

### Introduction

It is the trainee's responsibility to proficiently perform the tasks in accordance with the established standards. The tasks that make up *Chapter 2* of this guide represent the skills required to perform in the capacity of an engineer. There are four parts to this learning process:

- Read the assignments and ask questions.
- Pay attention during demonstrations.
- Complete walk-through with instructor.
- Practice the skill.

---

### D.1. Read the assignments and ask questions

First, the trainee must become familiar with each task. All reading assignments must be read carefully. The trainee should seek guidance from the instructor to clear up any uncertainties.

---

### D.2. Pay attention during demonstrations

Second, while the task is being demonstrated by the instructor, the trainee must pay close attention.

---

### D.3. Complete walk-through with instructor

Third, the trainee will complete the task the first time with the instructor walking the trainee through the steps.

---

### D.4. Practice the skill

Fourth, the trainee must practice the skill for consistent success at the task. The instructor will not sign off any task as complete until the trainee can consistently and correctly complete the task unsupervised.

---

### D.5. Certification process

Once all required qualifications are completed, the certification process can begin.

---





## Section E. Boat Types

### Introduction

The following sections indicate the current listing of standard and non-standard boat (NSB) types. Where this listing conflicts with other reference documents regarding currently authorized boat types, the *Boat Management Manual*, COMDTINST M16114.4 (series) shall take precedence. To efficiently manage the logistics and training aspects of NSBs, district commanders should make every effort to minimize the number of different types of NSBs within their district. Standard boats remain the primary unit response resource. Consistent with *Response Boats 2010 – The Shore-Based Response Boat Strategic Vision and Transition Plan*, COMDTINST 16114.20 (series), units shall not substitute NSBs for standard boats, except at stations (small) where units use larger NSBs as the primary response resource.

### Standard boats

<b>ATON</b>	
ANB	55' AtoN Boat
BUSL	49' Stern Loading Buoy Boat
<b>Ship-based response</b>	
CB-L	19' – 22' Cutter Boat, large assigned onboard WLB, WHEC, WMEC, WIX, and WAGB
CB-M	17' and 18' Cutter Boat, medium assigned onboard WLM, WPB and WTGB
CB-S	14' and 15' Cutter Boat, small assigned onboard WLI, WLIC, WLR, 82' WPB and WYTL
CB-OTH	24' Cutter Boat - Over the Horizon (Zodiac 733 Interceptor)
MSB	26' Motor Surf Boat
<b>Shore-based response</b>	
MLB	44' and 47' Motor Lifeboat
SPC (HWX)	52' Heavy Weather Special Purpose Craft (previously the 52' MLB)
UTB	41' Utility Boat, big
<b>Training specific</b>	
ATB	41' Aviation Training Boat (same as 41' UTB)



## Non-standard boats

<b>Miscellaneous</b>	
DPB	38' Deployable Pursuit Boat (Fountain)
TPSB	25' Transportable Port Security Boat (Boston Whaler)
<b>ATON</b>	
ANB	63' and 64' AtoN Boat
BU	45' Buoy Boat
Cable	Cable Servicing Special Purpose Craft
TANB	Trailerable AtoN Boat
<b>Ship-based response</b>	
ASB	Arctic Survey Boat
LCVP	Landing Craft
MCB	Motor Cargo Boat
<b>Shore-based response</b>	
IMARV	50' and 55' Independent Maritime Response Vessel
<b>Training specific</b>	
CT-64	Cadet Training Boat
DPB	42' Deployable Pursuit Boat (Fountain)
SB	Sailboat
<b>Miscellaneous</b>	
Ferry	Ferry Special Purpose Craft
PWB	Port & Waterways Boat
SKF	Skiff – a trailerable, open construction boat < 19' without installed electronics used for unit tendering, waterborne maintenance, and specialized immediate vicinity SAR response.
SPC	General Special Purpose Craft – a boat that is unique in the performance of an authorized mission requiring specialized capability that cannot be met within the standardized shore-based response boat fleet.
SPC (LE)	Law Enforcement Special Purpose Craft
SPC (surf)	30' Surf Special Purpose Craft (previously the 30' SRB)



TPSB	22' Transportable Port Security Boat (Boston Whaler)
UTL	Utility Boat Light – a 17' – 28' 11" fiberglass or aluminum hulled boat that may have fendering, have installed electronics and engines, and does not fill an STA (sm) primary response boat allowance. The UTL is representative of the secondary response platform at multi-mission stations. UTL encompasses all remaining shore-based response boats (with the exception of skiffs and SPCs). It includes all boats, which previously filled RIBB, RIBM, UTL and RIBL allowances. Due to the variety of boats that make up this designation, a UTL may be funded at one of two possible SSLs based primarily on boat length.
UTM	Utility Boat Medium – a 25' – 40' 11" in length, closed or partially closed cabin, fiberglass or aluminum hulled boat that may have fendering, have installed electronics and engines, and fills an authorized STA (sm) allowance as the unit's primary response boat.





## Section F. Task List for Engineer

### Introduction

Which tasks must be completed depends on the crew position and type of boat for which the trainee is being qualified. Those tasks which must be accomplished to qualify for each particular boat type are listed below.

### NOTE

Tasks listed as ANY shall be completed once for all boats as indicated. Tasks listed as TYPE are boat type specific and shall be completed on each boat as listed below for qualification.

### BOAT TYPE

TASK	SKI WP FR	RBM RBS	CBL CBM	OTH	DPB	TPSB	TANB	MSB MCB ASB	SPC	UTL	UTB	MLB		BUSL ANB BU IMARV LC
												44	47	
ENG-01-01-41UTB											X			
ENG-01-02-41UTB											X			
ENG-01-03-41UTB											X			
ENG-01-04-41UTB											X			
ENG-01-05-41UTB											X			
ENG-01-06-41UTB											X			
ENG-01-06-41UTB											X			
ENG-01-07-41UTB											X			
ENG-01-08-41UTB											X			
ENG-01-09-41UTB											X			
ENG-01-10-41UTB											X			
ENG-01-11-41UTB											X			
ENG-01-12-41UTB											X			
ENG-01-13-41UTB											X			
ENG-01-14-41UTB											X			



TASK	SKI WP FR	RBM RBS	CBL CBM	OTH	DPB	TPSB	TANB	MSB MCB ASB	SPC	UTL	UTB	MLB		BUSL ANB BU IMARV LC
												44	47	
ENG-02-01-47MLB													X	
ENG-02-02-47MLB													X	
ENG-02-03-47MLB													X	
ENG-02-04-47MLB													X	
ENG-02-04-47MLB													X	
ENG-02-05-47MLB													X	
ENG-02-06-47MLB													X	
ENG-02-07-47MLB													X	
ENG-02-08-47MLB													X	
ENG-02-09-47MLB													X	
ENG-02-10-47MLB													X	
ENG-02-11-47MLB													X	
ENG-02-12-47MLB													X	
ENG-02-13-47MLB													X	
ENG-02-14-47MLB													X	
ENG-02-15-47MLB													X	
ENG-02-16-47MLB													X	
ENG-02-17-47MLB													X	
ENG-02-18-47MLB													X	
ENG-02-19-47MLB													X	
ENG-02-20-47MLB													X	



TASK	SKI WP FR	RBM RBS	CBL CBM	OTH	DPB	TPSB	TANB	MSB MCB ASB	SPC	UTL	UTB	MLB		BUSL ANB BU IMARV LC
												44	47	
ENG-02-21-47MLB													X	
ENG-02-22-47MLB													X	
ENG-03-01-44MLB												X		
ENG-03-02-44MLB												X		
ENG-03-03-44MLB												X		
ENG-03-04-44MLB												X		
ENG-03-05-44MLB												X		
ENG-03-06-44MLB												X		
ENG-03-07-44MLB												X		
ENG-03-08-44MLB												X		
ENG-03-09-44MLB												X		
ENG-03-10-44MLB												X		
ENG-03-11-44MLB												X		
ENG-03-12-44MLB												X		
ENG-03-13-44MLB												X		
ENG-03-14-44MLB												X		
ENG-03-15-44MLB												X		
ENG-03-16-44MLB												X		
ENG-03-17-44MLB												X		
ENG-04-01-30SPC									X					
ENG-04-02-30SPC									X					



TASK	SKI WP FR	RBM RBS	CBL CBM	OTH	DPB	TPSB	TANB	MSB MCB ASB	SPC	UTL	UTB	MLB		BUSL ANB BU IMARV LC
												44	47	
ENG-04-03-30SPC									X					
ENG-04-04-30SPC									X					
ENG-04-05-30SPC									X					
ENG-04-06-30SPC									X					
ENG-04-07-30SPC									X					
ENG-04-08-30SPC									X					
ENG-04-09-30SPC									X					
ENG-04-10-30SPC									X					
ENG-04-11-30SPC									X					
ENG-04-12-30SPC									X					
ENG-05-01-49BUSL														X
ENG-05-02-49BUSL														X
ENG-05-03-49BUSL														X
ENG-05-04-49BUSL														X
ENG-05-05-49BUSL														X
ENG-05-06-49BUSL														X
ENG-05-07-49BUSL														X
ENG-05-08-49BUSL														X
ENG-05-09-49BUSL														X
ENG-05-10-49BUSL														X
ENG-05-11-49BUSL														X




TASK	SKI WP FR	RBM RBS	CBL CBM	OTH	DPB	TPSB	TANB	MSB MCB ASB	SPC	UTL	UTB	MLB 44 47		BUSL ANB BU IMARV LC
ENG-05-12-49BUSL														X
ENG-05-13-49BUSL														X
ENG-05-14-49BUSL														X
ENG-05-15-49BUSL														X
ENG-06-01-55ANB														X
ENG-06-02-55ANB														X
ENG-06-03-55ANB														X
ENG-06-04-55ANB														X
ENG-06-05-55ANB														X
ENG-06-06-55ANB														X
ENG-06-07-55ANB														X
ENG-06-08-55ANB														X
ENG-06-09-55ANB														X
ENG-06-10-55ANB														X
ENG-06-11-55ANB														X
ENG-06-12-55ANB														X
ENG-06-13-55ANB														X
ENG-06-14-55ANB														X
ENG-06-15-55ANB														X
ENG-06-16-55ANB														X
ENG-06-17-55ANB														X



TASK	SKI WP FR	RBM RBS	CBL CBM	OTH	DPB	TPSB	TANB	MSB MCB ASB	SPC	UTL	UTB	MLB		BUSL ANB BU IMARV LC
												44	47	
ENG-07-01-TPSB						X								
ENG-07-02-TPSB						X								
ENG-07-03-TPSB						X								
ENG-07-04-TPSB						X								
ENG-07-05-TPSB						X								
ENG-07-06-TPSB						X								
ENG-07-07-TPSB						X								
ENG-07-08-TPSB						X								
ENG-07-09-TPSB						X								
ENG-07-10-TPSB						X								
ENG-07-11-TPSB						X								
ENG-07-12-TPSB						X								
ENG-07-13-TPSB						X								
ENG-07-14-TPSB						X								
ENG-07-15-TPSB						X								
ENG-07-16-TPSB						X								
ENG-08-01-NSB	X		X	X	X		X			X				
ENG-08-02-NSB	X		X	X	X		X			X				
ENG-08-03-NSB	X		X	X	X		X			X				
ENG-08-04-NSB	X		X	X	X		X			X				
ENG-08-05-NSB	X		X	X	X		X			X				



TASK	SKI WP FR	RBM RBS	CBL CBM	OTH	DPB	TPSB	TANB	MSB MCB ASB	SPC	UTL	UTB	MLB		BUSL ANB BU IMARV LC
												44	47	
ENG-08-06-NSB	X		X	X	X		X			X				
ENG-08-07-NSB	X		X	X	X		X			X				
ENG-08-08-NSB	X		X	X	X		X			X				
ENG-08-09-NSB	X		X	X	X		X			X				
ENG-08-10-NSB	X		X	X	X		X			X				
<b>KEY</b>  X = Task required for boat type qualification. O = Task required, if equipped, for boat type qualification.														

**NOTE** 

Transportable Port Security Boat (TPSB) Engineer qualification is a two-level qualification process for all Port Security Unit (PSU) TPSB Engineers. Level I training consists of the specific UTL Engineer tasks as outlined in this manual. Level II training, TPSB Tactics Engineer Qualification, is listed in *Section 2.2 to PSU Personnel Qualification Standard*, COMDTINST 1540.10 (series), and must be successfully completed to be certified as a TPSB Tactics Engineer.





## Chapter 2

### Engineer Qualification Tasks

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#### Introduction

The following are the instructions for this chapter:

- The purpose of this chapter is to provide guidance on the trainee's progress through the qualification tasks.
  - The instructor should present the tasks to the trainee in a logical order using the instructions provided in *Chapter 1*.
  - Tasks should be signed, dated, and placed in the trainee's training record when the instructor is satisfied that the trainee can consistently perform a task in accordance with all standards and conditions.
- 

#### Prerequisites

A prospective Engineer must:

- Be a certified Crew Member on the boat type for which they are seeking this higher level of qualification.
- 

#### In this chapter

This chapter contains the following sections:

Section	Title	See Page
A	41' Utility Boat (UTB)	2-3
B	47' Motor Lifeboat (MLB)	2-23
C	44' Motor Lifeboat (MLB)	2-57
D	30' Special Purpose Craft (SPC) (Surf)	2-77
E	49' Buoy Utility Stern Loading (BUSL) Boat	2-93
F	55' Aids to Navigation Boat (ANB)	2-113
G	Transportable Port Security Boat (TPSB)	2-135
H	Non-Standard Boat	2-157

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## Section A. 41' Utility Boat (UTB)

### Introduction

The following are objectives of Division One:

- **Demonstrate** knowledge of the casualties and discrepancies that would prevent a 41' UTB from getting underway.
- **Demonstrate** the ability to perform Engineering Casualty Control on a 41' UTB.

### In this section

This section contains the following tasks:

Task Number	Task	See Page
ENG-01-01-41UTB	Locate Components and Accessories of the UTB Propulsion System	2-5
ENG-01-02-41UTB	List the Disabling Casualties and Restrictive Discrepancies that Prevent a UTB from Getting Underway	2-7
ENG-01-03-41UTB	Conduct a Pre-Start Check-Off on a UTB	2-8
ENG-01-04-41UTB	Start the UTB	2-9
ENG-01-05-41UTB	Secure the UTB After Operations	2-11
ENG-01-06-41UTB	Fire in the Engine Room	2-13
ENG-01-07-41UTB	Loss of Steering	2-14
ENG-01-08-41UTB	Collision with a Submerged Object/Running Aground	2-16
ENG-01-09-41UTB	Reduction Gear Failure	2-17
ENG-01-10-41UTB	Main Engine/Reduction Gear Failure	2-18
ENG-01-11-41UTB	Loss of Main Engine Lube Oil Pressure	2-19
ENG-01-12-41UTB	Main Engine High Water Temperature	2-20
ENG-01-13-41UTB	Shaft Stuffing Box/Packing Gland Overheating	2-21
ENG-01-14-41UTB	Draw the UTB Systems	2-22

**TASK ENG-01-01-41UTB      Locate Components and Accessories of the UTB Propulsion System****References**

- a. *Boat Crew Seamanship Manual*, COMDTINST M16114.5 (series)
- b. *41' UTB Operator's Handbook*, COMDTINST M16114.2 (series)

**Conditions**

The task will be performed pierside, while normal unit training and lecture programs pertaining to boat operations are being conducted. Where practicable, the pierside instructions should be followed by related underway exercises.

**Standards**

The trainee, while aboard a UTB, without reference material, must locate components and accessories of the propulsion system as listed below:

Performance Criteria	Completed (Initials)
1. Locate the main engines and state the following: <ol style="list-style-type: none"> <li>a. Make and model.</li> <li>b. Horsepower of each engine.</li> <li>c. Direction of shaft rotation of each engine.</li> <li>d. Oil capacity and type of oil used in the main engines.</li> <li>e. Description of the Airsep system.</li> </ol>	_____
2. Locate the engine stop handles and state why they must remain in the <i>up</i> position when the engines are not running.	_____
3. Locate the following gauges for each engine and state their proper readings at <i>idle</i> and <i>cruising</i> speeds: <ol style="list-style-type: none"> <li>a. Coolant temperature.</li> <li>b. Lube oil pressure.</li> <li>c. Marine gear oil pressure.</li> </ol>	_____
4. Describe the fuel oil system: <ol style="list-style-type: none"> <li>a. State the location and capacity of the fuel tanks and why the tanks are not filled to 100 percent capacity.</li> <li>b. State the usable capacity of each tank.</li> <li>c. State the type of fuel used.</li> <li>d. Locate the fill pipes, fuel tank vents and sounding rods.</li> <li>e. Locate the fuel filters and priming pump.</li> <li>f. Locate the in-line fuel sight glass and fuel pump.</li> <li>g. Locate the fuel cooling tubes.</li> <li>h. Locate the fuel return check valve.</li> </ol>	_____
5. Describe the engine cooling systems: <ol style="list-style-type: none"> <li>a. State the type of systems used.</li> <li>b. Locate the seachest and air vent valve.</li> <li>c. Locate the sea suction valve, deicing valve and duplex sea strainer.</li> <li>d. State how and why the duplex strainer should be cleaned one at a time.</li> <li>e. Locate the raw water pump.</li> <li>f. State how the exhaust gases are cooled.</li> <li>g. Locate the marine gear oil cooler, and state how the marine gear oil is cooled.</li> <li>h. State the jacket water system capacity of each engine.</li> <li>i. Locate the engine oil cooler, and state how the engine oil is cooled.</li> </ol>	_____



Performance Criteria	Completed (Initials)
6. Describe the engine alarm system: a. State the purpose of the engine alarm system and at what temperature or pressure the alarms are activated. b. Locate the following: (1) Water temperature light and sensor. (2) Oil pressure light and sensor. (3) Alarm cutoff switches.	_____
7. Locate the marine gear and state the following: a. Make and model. b. Oil capacity and type of oil used in the marine gear. c. Gear ratio in <i>forward</i> and <i>reverse</i> . d. Direction of rotation, both engines in <i>forward</i> and <i>reverse</i> .	_____
8. Describe the boat's propellers and state the following: a. Diameter and pitch. b. Number of blades.	_____
9. Locate the main engine jacket water heaters and state the following: a. The purpose of the heaters. b. Operating temperature range of the system. c. The location of the breakers for the main engine jacket water heaters.	_____
10. Locate the fire pump, fire pump sea suction valve, strainer, power take-off (PTO), PTO lever and discharge pipe.	_____
11. State the maximum engine RPMs with the fire pump engaged.	_____
12. Locate the PTO support bracket and explain its design function.	_____
13. Locate and state the purpose of the fixed Halon fire extinguishing system. a. Halon cylinder and state the PSI. b. Engine shutdown cylinders. c. Thermal sensors and at what temperature the alarm will sound. d. State what will happen when the Halon cylinder is extinguished. e. Audible alarm system.	_____

**Instructor** \_\_\_\_\_ **Date** \_\_\_\_\_

**Comments** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**TASK ENG-01-02-41UTB      List the Disabling Casualties and Restrictive Discrepancies that Prevent a UTB from Getting Underway**

**References**

- a. *41' UTB Operator's Handbook*, COMDTINST M16114.2 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

The task will be performed pierside, while normal unit training and lecture programs pertaining to small boat operations are being conducted. Where practicable, the pierside instructions should be followed by related underway exercises.

**Standards**

With reference material and without error, the trainee must state the equipment that, should a casualty or discrepancy occur, will prevent a UTB from getting underway for an operational mission. The trainee must know the difference between disabling casualties and mission-critical casualties. The trainee must know what steps must be followed when a casualty or discrepancy is found.

Performance Criteria	Completed (Initials)
1. State the equipment that is listed in <i>Appendix E (Disabling Casualties)</i> , <i>41' UTB Operator's Handbook</i> .	_____
2. State the equipment that is listed in <i>Appendix F (Restrictive and Major Discrepancies)</i> , <i>41' UTB Operator's Handbook</i> .	_____

**Instructor**

**Date**

**Comments**



**TASK ENG-01-03-41UTB      Conduct a Pre-Start Check-Off on a UTB**

**References**


a. *41' UTB Operator's Handbook*, COMDTINST M16114.2 (series)

**Conditions**

This task will be performed pierside under the direct supervision of an instructor when making preparations for getting underway, or while normal unit training and lecture programs pertaining to boat operations are being conducted.

**Standards**

The trainee must properly complete all steps below in order to successfully complete this task:

Performance Criteria	Completed (Initials)
1. Be sure all bilges are free of unsecured equipment or materials (e.g., loose rags, tools, or cleaning gear).	_____
2. Be sure all bilges are free of fuel, oil, and water.	_____
3. Check the main engine and the marine gear oil levels. Add oil only as necessary to bring the level to the H mark on the dipstick. Do not overfill; damage to the engine seals may result.	_____
<b>NOTE</b>  When the engine is secured, the marine gear oil level (full) should be above the H mark on the dipstick. The marine gear oil level must be re-checked after the engine is started and idling to confirm the correct level on the dipstick.	
4. Be sure raw water coolant system sea strainer baskets are clean.	_____
5. Be sure fuel tank high suction valves are <i>open</i> .	_____
6. Ensure priming and stripping valves in the fuel supply system are <i>closed</i> .	_____
7. Open the raw water cooling system valves for each main engine at the seachest.	_____
8. Check main engine coolant level in the heat exchanger. It should be approximately 2 inches below the fill neck. Add coolant only as necessary.	_____
9. Check alternator belts for proper tension--no greater than <sup>7</sup> / <sub>16</sub> -inch depression per foot of span.	_____
10. Use the sounding rods to sound each fuel tank. Record the amount of fuel in each tank on the unit's daily boat check-off sheet. Fuel level should be at or near 231.5 gallons (95 percent) per tank.	_____
11. After securing shore-tie power at the 110-VAC circuit breaker and on the pier, remove the shore-tie plug and screw the protective cover over the receptacle on the boat.	_____
12. When the shore-tie cable is moved to the pier, protect the shore-tie plug from the elements with the attached rubber cap.	_____
<b>CAUTION !</b> Never start or run the engines with the shore-tie energized. Damage to the alternator may occur.	

**Instructor**

**Date**

**Comments**

**TASK ENG-01-04-41UTB     Start the UTB****References**


- a. *41' UTB Operator's Handbook*, COMDTINST M16114.2 (series)

**Conditions**


This task will be performed pierside under the direct supervision of an instructor when making preparations for getting underway, or while normal unit training and lecture programs pertaining to boat operations are being conducted.

**Standards**

The trainee must properly complete all steps below in order to successfully complete this task:

Performance Criteria	Completed (Initials)
<p>1. The following procedures must be performed to start the main engines:</p> <ul style="list-style-type: none"> <li>a. At the 24/28-volt DC circuit breaker panel, place circuit breaker #11 and #12 (port and starboard main engine starting motors) and #17 (main engine alarms) in the <i>on</i> position. All other circuit breakers must be in the <i>off</i> position.</li> <li>b. Be sure the engine alarm bell toggle switches on the steering console are in the <i>on</i> position.</li> <li>c. Be sure the Morse Controls are in <i>neutral</i>.</li> <li>d. Push down the main engine fuel stop cables (T-handles). This opens the fuel supply system for the main engines.</li> <li>e. Depress the main engine starter button and hold until the engine starts.</li> </ul>	_____
<p><b>CAUTION !</b> Do not depress both starter buttons simultaneously. Start engines one at a time.</p>	
<ul style="list-style-type: none"> <li>f. If an engine does not start within 30 seconds, release the start button, let stand 2 minutes, and repeat the procedure. During the 2-minute waiting period, ensure steps a and b above were completed. If after four tries the main engine will not start, consult the troubleshooting chart on page 36 of Diesel Main Propulsion Unit for VT-903M.</li> <li>g. After the main engine has started, check for adequate lube oil pressure and overboard raw water coolant discharge from the exhaust end pipe at the transom.</li> <li>h. With one main engine started and idling, repeat steps d, e, and f to start the other engine.</li> </ul>	
<p>2. The following procedures must be performed in the post-start inspection:</p> <ul style="list-style-type: none"> <li>a. Ensure forward and astern propulsion for engines are operable.</li> <li>b. Check the following gauges: <ul style="list-style-type: none"> <li>(1) main engine lube oil gauges,</li> <li>(2) marine gear lube oil pressure gauges, and</li> <li>(3) main engine jacket water temperature gauges.</li> </ul> </li> <li>c. Check the following items for discrepancies and correct and report: <ul style="list-style-type: none"> <li>(1) jacket water system and raw water system for leaks,</li> <li>(2) main engine and marine gear for lube oil leaks,</li> <li>(3) fuel oil system for leaks,</li> <li>(4) marine gear oil level, and</li> <li>(5) exhaust leaks.</li> </ul> </li> </ul>	_____
<p><b>NOTE</b>  With the main engine at idle, the oil level of the marine gear must be between the L and H marks on the dipstick. If additional oil is required, you MUST secure the main engine for the affected marine gear before adding the oil.</p>	



Performance Criteria		Completed (Initials)
3. The following procedures must be performed to warm up the diesel engine:		_____
<b>NOTE</b> 	Diesel engines are best warmed-up under load. When practical, get underway as soon as the checkoff procedures are completed. If upon completion of post-start inspection the main engines have not warmed-up, increase main engine idle speed to 1000 RPM for a short warm-up period.	
<ul style="list-style-type: none"><li>a. Be sure the marine gear is in <i>neutral</i> position and the main engine is at <i>idle</i> speed (RPM).</li><li>b. Pull the throttle arm out from the Morse Control mechanism where it makes the 90-degree turn into the Morse Control mechanism (note the indentations in the lower portion of the throttle arm) disengaging the marine gear actuating cable from the throttle mechanism.</li><li>c. With the throttle handle pulled out, move the throttle in either direction to increase main engine RPMs.</li><li>d. Adjust the main engine speed (RPM) by moving the Morse Control throttle handle further in the direction selected until the tachometer reading matches the desired RPMs.</li></ul>		
4. The following procedures must be performed to energize the circuit breakers: <ul style="list-style-type: none"><li>a. At the 24/28-volt DC circuit breaker panel, energize all the remaining circuit breakers for the electrical equipment to be used.</li><li>b. At the 12-volt DC circuit breaker panel, energize all the circuit breakers for the electronics.</li></ul>		_____

Instructor

Date

Comments

**TASK ENG-01-05-41UTB      Secure the UTB After Operations****References**a. *41' UTB Operator's Handbook*, COMDTINST M16114.2 (series)**Conditions**

This task will be accomplished whenever returning to unit, or when unit training is being conducted pertaining to small boat operations. The trainee will complete the task under the direct supervision of an instructor.

**Standards**

The trainee must properly complete all steps below in order to successfully complete this task:

Performance Criteria	Completed (Initials)
1. If recently run at high RPMs, allow the engines to <i>idle</i> 4 to 5 minutes for cool-down. An abrupt shutdown of hot engines produces severe internal metal stress. This cooling period is especially important with turbocharged engines.	_____
2. Secure all electrical and electronic equipment except for circuits #4 and #11 in the 12-volt DC panel circuit breaker.	_____
3. Secure all 24/28-volt DC panel circuit breakers except #11 and #12 for the main engine starts, #17 for the main engine alarms, #1, #16, and #25 for the blue light, horn, Halon alarm, and the bilge/fire alarm.	_____
4. Secure the main engines by pulling up on the engine fuel stop cables (T-Handles) at the steering console.	_____
<b>CAUTION !</b> The main engine stops must remain in the <i>up</i> position at all times when the engines are secured. Failure to do so may allow fuel oil to leak through the injectors into the cylinders causing a hydraulic lock of the main engine.	
5. Secure 24/28-volt DC panel circuit breakers #11, #12, and #17.	_____
6. Secure the sea suction valves.	_____
7. Remove all water, oil, and fuel from the bilges. Wipe them dry.	_____
8. Wipe down all machinery and remove the wipe-down cloths.	_____
9. Make a visual check of all hoses, wires, belts and other items subject to wear.	_____
10. Stow all equipment in its proper place.	_____
11. Rinse all fire fighting and dewatering equipment used during the mission with freshwater, then dry and stow it.	_____
<b>NOTE</b> If the portable dewatering pump was used, replace it with the unit spare while it is being cleaned and serviced. Replacement of the pump will allow the boat to remain mission ready.	
12. Connect the shore-tie cable to the boat. Energize the dockside circuit breaker first, then the main circuit breaker in the 110-volt AC circuit breaker panel.	_____
13. Energize the circuit breakers for the battery charger and main engine heaters in the 110-volt AC circuit breaker panel.	_____
14. Sound each fuel tank and fill to 95 percent (231.5 gallons).	_____
15. Close all doors, hatches, and scuttles.	_____
16. Wash down the boat with freshwater.	_____
<b>NOTE</b> The mission is <b>not</b> complete until the boat is ready for the next mission.	

<b>Instructor</b>	_____	<b>Date</b>	_____
<b>Comments</b>	_____ _____ _____		

**TASK ENG-01-06-41UTB      Fire in the Engine Room****References**


- a. *Boat Crew Seamanship Manual*, COMDTINST M16114.5 (series)
- b. *41' UTB Operator's Handbook*, COMDTINST M16114.2 (series)
- c. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task can be performed while underway or pierside. The instructor will simulate the casualty by providing the symptoms to the trainee. Given a UTB with required fire fighting equipment and installed systems, take corrective action.

**Standards**

Trainee shall demonstrate proper methods of controlling and extinguishing an engine room fire too large to be combated with only the portable fire extinguishers aboard, in accordance with the steps listed below:

Performance Criteria		Completed (Initials)
<b>NOTE</b>  If the engine room temperature exceeds 190 °F, an alarm will sound in the pilothouse.		
1. Inspect the engine room through the viewing window to determine the cause of the alarm.		_____
2. Decide if the fire can be extinguished using a hand-held fire extinguisher.		_____
3. If the Halon 1301 system must be activated, take the following steps: <ol style="list-style-type: none"> <li>a. Secure engines.</li> <li>b. Clear engine room of personnel.</li> <li>c. Close engine room hatches and scuttles.</li> <li>d. Completely discharge the Halon 1301.</li> <li>e. Keep engine room secured.</li> <li>f. Ensure there is a reflash watch set in a clear atmosphere.</li> </ol>		_____
4. If the situation warrants, to avoid personnel injury or death, take the following actions: <ol style="list-style-type: none"> <li>a. Ensure engine room hatches remain closed for 15 minutes.</li> <li>b. Open engine room hatches to permit Halon and products of Halon decomposition to disperse. Natural draft will cause Halon to disperse allowing crew members to check system integrity and determine the status of the compartment.</li> <li>c. From a safe location, inspect engine room and check system integrity.</li> <li>d. After the hatches have been open for 15 minutes: <ol style="list-style-type: none"> <li>(1) Make repairs.</li> <li>(2) Maintain reflash watch.</li> <li>(3) Start unaffected engine.</li> <li>(4) Secure engine when a safe location is reached.</li> </ol> </li> </ol>		_____

**Instructor****Date****Comments**

**TASK ENG-01-07-41UTB      Loss of Steering****References**

- a. *41' UTB Operator's Handbook*, COMDTINST M16114.2 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)



**Conditions**

This task will be performed while underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
<ol style="list-style-type: none"> <li>1. The following procedures must be performed if a steering hose is broken:               <ol style="list-style-type: none"> <li>a. Bring both main engine throttle controls to the <i>neutral</i> or minimum steerage clutch position if in a running sea. Try to put the seas on the bow.</li> <li>b. Notify crew of casualty.</li> <li>c. Coxswain: Steer with engines, if needed.</li> <li>d. Engineer: Investigate the casualty.</li> <li>e. Crew Member: If necessary, rig the anchor.</li> <li>f. Crew Member: Remove emergency tiller from the lazarette.</li> <li>g. Place engines in <i>neutral</i>.</li> <li>h. Carefully mount the emergency tiller on the port rudder post.</li> <li>i. Gain control of the rudders using the emergency tiller.</li> <li>j. Detach release pin on starboard rudder post to disconnect steering cable. Tie cable/hydraulic ram out of way.</li> <li>k. Test rudders for complete range of motion (full port to full starboard).</li> <li>l. Bring the tiller arm about until the rudder arm position indicates the rudders are amidship.</li> <li>m. Engage each shaft separately to reduce propeller thrust on the rudder blades and emergency tiller.</li> <li>n. Keep the main engine RPMs at a minimum to reduce strain on the crew tending the emergency tiller.</li> <li>o. The coxswain shall give standard steering commands to the crew members tending the rudder.</li> <li>p. Notify station of situation.</li> </ol> </li> </ol>	<p>_____</p>
<ol style="list-style-type: none"> <li>2. The following procedures must be performed to regain control with a jammed rudder:               <ol style="list-style-type: none"> <li>a. Reduce RPMs on both engines. Bring both main engine throttle controls to the <i>neutral</i> or minimum steerage clutch position if in a running sea. Try to put the seas on the bow.</li> <li>b. Notify crew of casualty.</li> <li>c. Coxswain: Steer with engines, if needed.</li> <li>d. Engineer: Investigate the casualty.</li> <li>e. Crew Member: If necessary, rig the anchor.</li> <li>f. Crew Member: Remove emergency tiller from the lazarette.</li> <li>g. Place engines in <i>neutral</i>.</li> <li>h. Carefully install emergency tiller, mounting it on the port rudder post. Maintain positive control.</li> <li>i. Detach release pin on starboard rudder post to disconnect steering cable/hydraulic ram.</li> <li>j. Turn steering wheel to isolate cable/ram damage.</li> <li>k. Reinstall steering cable/hydraulic ram release pin.</li> <li>l. Maintain control of the port rudder with the tiller and the starboard rudder with the steering wheel.</li> <li>m. Engineer: If necessary, carefully remove the tie rod bar connecting the port and starboard rudder posts.</li> <li>n. Use caution while exercising each rudder to determine which rudder is jammed. Determine the cause, if possible (i.e., debris, damage, etc.).</li> </ol> </li> </ol>	<p>_____</p>

Performance Criteria		Completed (Initials)
<b>NOTE</b> 	If the port rudder is jammed, lash the emergency tiller/rudder arm with mooring lines to the stern cleats to prevent movement. If the starboard rudder is jammed, keep the ram attached to prevent movement.	
<ul style="list-style-type: none"> <li>o. If unable to free the jammed rudder (using attempts to rack it back and forth with the emergency tiller or by clearing any debris), secure it, as soon as possible, to prevent movement.</li> <li>p. After securing the jammed rudder, adjust the opposite rudder to gain the greatest steerage. Use main engines, throttles shafts, and propellers, to regain and maintain steerage.</li> <li>q. Keep main engine RPMs at a minimum to reduce stress on the crew tending the emergency tiller.</li> <li>r. The coxswain shall give standard steering commands to the crew members tending the rudder.</li> </ul>		
<b>CAUTION !</b>	The starboard rudder does not have rudder stops. Exercise extreme caution when removing the tie rod bar from either rudder arm. Removing the tie rod bar could allow the starboard rudder blade to turn into the starboard propeller.	
<b>WARNING</b> 	To prevent injury, man the tiller at <b>all</b> times while it is installed on a rudder post. Backing down produces a heavy surge on the rudder. If sternway is necessary, do not exceed 1000 RPM.	
s. Notify station of situation.		

**Instructor** \_\_\_\_\_ **Date** \_\_\_\_\_

**Comments** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**TASK ENG-01-08-41UTB Collision with a Submerged Object/Running Aground****References**

- a. *41' UTB Operator's Handbook*, COMDTINST M16114.2 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task can be performed while underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Reduce RPMs to <i>neutral</i> on both engines.	_____
2. Notify crew of casualty.	_____
3. Coxswain: Verify position.	_____
4. Engineer: Proceed to the engine room to check for compartment flooding.	_____
5. Crew Member: Check all other compartments for flooding.	_____
6. Engage engines at various speeds to check for vibration.	_____
7. Notify station of situation.	_____
<b>CAUTION !</b> Excessive shaft or propeller vibration may further damage the strut or stern tube bearings.	

**Instructor****Date****Comments**

**TASK ENG-01-09-41UTB      Reduction Gear Failure**

**References**


- a. *Boat Crew Seamanship Manual*, COMDTINST M16114.5 (series)
- b. *41' UTB Operator's Handbook*, COMDTINST M16114.2 (series)

**Conditions**

This task can be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Bring both main engine throttle controls to the <i>neutral</i> position.	_____
2. Check the marine gear drive oil pressure gauge for the affected side. If the marine gear drive oil pressure gauge reads zero when the marine gear is in the <i>neutral</i> position, secure the respective main engine <b>immediately</b> .	_____
3. The MG-509 marine gear is equipped with a COME HOME feature that allows manual engagement of the forward clutch pack for emergency use only. The COME HOME feature for the port main engine/marine gear cannot be utilized due to the method of hookup.	_____
4. To engage the COME HOME feature, remove the two COME HOME access plugs from the manifold over the forward clutch location (aft side of marine gear). Use a screwdriver and alternately tighten the COME HOME set screws in a <i>clockwise</i> direction until clutch lock-up is attained. (See <i>41' UTB Service Manual</i> , TPN 4368 for a detailed diagram.)	_____
<b>WARNING</b>  The use of the COME HOME feature in the MG-509 marine gear requires that the starboard main engine be secured <b>before</b> the COME HOME feature can be engaged or disengaged.	

**Instructor**

**Date**

**Comments**

**TASK ENG-01-10-41UTB      Main Engine/Reduction Gear Failure****References**


- a. *41' UTB Operator's Handbook*, COMDTINST M16114.2 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. The following procedures must be performed if the main engine is operable: <ol style="list-style-type: none"> <li>a. With the drive oil level at the FULL mark on the dipstick.</li> <li>b. Start and run the main engine in the <i>neutral</i> clutch position for a minimum of 5 minutes.</li> <li>c. Marine gear drive oil pressure must remain at the normal operating pressure during this 5-minute period.</li> <li>d. This must be done after every 8 hours of free spinning operation.</li> </ol>	_____
2. The following procedures must be performed if the main engine is not operable: <ol style="list-style-type: none"> <li>a. Complete the following steps after operating the marine gear using the free spin feature for 8 hours.</li> <li>b. Plug the dipstick tube and fill the marine gear completely with oil.</li> <li>c. Drain the excess oil from the marine gear until it again reaches the FULL mark on the dipstick, after which free spin operation is allowed.</li> <li>d. This <b>must</b> be done after every 8 hours of free spinning operation.</li> </ol>	_____
3. The following procedure must be performed if the main engine and/or marine gear is/are disabled: <ol style="list-style-type: none"> <li>a. Lock the shaft, although there is no standard shaft locking device.</li> </ol>	_____
<b>WARNING</b>  You must take extreme care not to cause personnel injury or damage to the boat.	
<b>CAUTION !</b> <b>Do not</b> use wrenches, pry bars, etc. to keep a propeller shaft from rotating. These devices can slip or disengage causing personnel injury, puncture the hull, or damage the machinery. See Mechanical Emergency COME HOME feature or FREE-WHEELING feature in the <i>41' UTB Operator's Handbook</i> , COMDTINST M16114.2 (series).	

**Instructor****Date****Comments**

**TASK ENG-01-11-41UTB      Loss of Main Engine Lube Oil Pressure**

**References**

- a. *41' UTB Operator's Handbook*, COMDTINST M16114.2 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The instructor will ask the trainee to state the proper oil pressure range and at what pressure the alarm will sound. The trainee must state the correct pressures. Upon being given the casualty symptoms, the trainee will simulate and state correct procedures to be taken. The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Reduce RPMs to <i>clutch ahead</i> on both engines.	_____
2. Identify affected engine.	_____
3. Secure affected engine.	_____
4. Notify crew of casualty.	_____
5. Check engine room through lower cabin view port to assess the situation.	_____
6. Rig the anchor, if necessary.	_____
7. Engineer: Enter engine room. Crew Member: Act as safety observer for Engineer.	_____
8. Ensure fire extinguishers are on scene.	_____
9. Check bilge area for lube oil.	_____
10. Check lube oil for quality and quantity.	_____
11. Notify station of situation.	_____
12. Return to station if cause cannot be determined or repaired.	_____

**Instructor**

**Date**

**Comments**

**TASK ENG-01-12-41UTB      Main Engine High Water Temperature****References**

- a. *41' UTB Operator's Handbook*, COMDTINST M16114.2 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed while underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The instructor will ask the trainee to state the proper jacket water temperature range and at what temperature the alarm will sound. The trainee must state the correct temperatures. Upon being given the casualty symptoms, the trainee will simulate and state correct procedures to be taken.

Performance Criteria	Completed (Initials)
1. Reduce RPMs to <i>clutch ahead</i> on both engines.	_____
2. Identify affected engine.	_____
3. Notify crew of casualty.	_____
4. If temperature continues to rise, secure engine.	_____
<b>CAUTION !</b> While the engine is secured and the fuel stop is in the <i>up</i> position, to prevent seizure until the engine cools, periodically rotate the engine with the starter.	
5. Check overboard discharge.	_____
6. <u>Engineer</u> : Check engine room through lower cabin view port to assess the situation.	_____
7. <u>Crew Member</u> : If necessary, rig the anchor.	_____
8. <u>Engineer</u> : Enter engine room. <u>Crew Member</u> : Act as safety observer for engineer.	_____
9. Ensure sea suction valves are <i>open</i> .	_____
10. Check sea strainers. If necessary, shift strainers.	_____
11. Check bilges.	_____
12. Check cooling lines.	_____
13. Check raw water pump with back of hand.	_____
14. Check expansion tank after engine has cooled.	_____
15. Notify station of situation.	_____

**Instructor****Date****Comments**

**TASK ENG-01-13-41UTB      Shaft Stuffing Box/Packing Gland Overheating**

**References**


- a. *Boat Crew Seamanship Manual*, COMDTINST M16114.5 (series)
- b. *41' UTB Operator's Handbook*, COMDTINST M16114.2 (series)

**Conditions**

This task can be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, after being given the casualty symptoms must accurately identify the casualty and perform the correct procedures, following the steps listed below:

Performance Criteria		Completed (Initials)
<b>WARNING</b>  Do not place a hand near the turning shaft until you bring that shaft to clutch speed. Always exercise caution when working around a turning shaft.		
1. Bring both main engine throttle control handles to the clutch position. <b>Do not</b> disengage the shafts or secure the main engines.		_____
2. Cool down the shaft and packing gland with raw water.		_____
3. Loosen the packing gland nut.		_____

**Instructor**

**Date**

**Comments**

**TASK ENG-01-14-41UTB      Draw the UTB Systems****References**a. *41' UTB Operator's Handbook*, COMDTINST M16114.2 (series)**Conditions**

The task will be performed pierside. Trainee must accomplish task without prompting or use of a reference.

**Standards**

The trainee must correctly trace out the following systems:

Performance Criteria	Completed (Initials)
1. Trace out and draw the following systems: <ul style="list-style-type: none"> <li>a. Fuel oil system</li> <li>b. Raw water cooling system</li> <li>c. Freshwater system</li> <li>d. Hydraulic steering system</li> <li>e. Lube oil system</li> <li>f. Engine exhaust system</li> <li>g. Fixed Halon fire fighting system</li> <li>h. Installed dewatering system</li> <li>i. Reduction gear lube oil system</li> </ul>	_____

**Instructor****Date****Comments**

## Section B. 47' Motor Lifeboat (MLB)

### Introduction

The following are objectives of Division Two:

- **Demonstrate** knowledge of the casualties and discrepancies that would prevent a 47' MLB from getting underway.
- **Demonstrate** the ability to perform Engineering Casualty Control on a 47' MLB.

### In this section

This section contains the following tasks:

Task Number	Task	See Page
ENG-02-01-47MLB	Locate Components and Accessories of the 47' MLB Propulsion System	2-25
ENG-02-02-47MLB	Locate Components and Accessories of the 47' MLB Auxiliary System	2-27
ENG-02-03-47MLB	Locate Components and Accessories of the 47' MLB Electrical System	2-29
ENG-02-04-47MLB	Locate Installed Equipment and Fittings on the 47' MLB	2-30
ENG-02-05-47MLB	Set Watertight Integrity Aboard the 47' MLB	2-34
ENG-02-06-47MLB	List the Disabling Casualties and Restrictive Discrepancies that Prevent the 47' MLB from Getting Underway	2-35
ENG-02-07-47MLB	Conduct a Pre-Start Check-Off on the 47' MLB	2-36
ENG-02-08-47MLB	Start the 47' MLB	2-38
ENG-02-09-47MLB	Secure the 47' MLB After Operations	2-40
ENG-02-10-47MLB	Capsizing	2-42
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**TASK ENG-02-01-47MLB      Locate Components and Accessories of the 47' MLB Propulsion System****References**

- a. 47' Motor Lifeboat Operator's Handbook, COMDTINST M16114.25 (series)
- b. 47' Motor Lifeboat Technical Publication Numbers 3355-3359

**Conditions**

The task will be performed pierside, while normal unit training and lecture programs pertaining to boat operations are being conducted. Where practicable, the pierside instructions should be followed by related underway exercises.

**Standards**

Aboard a 47' MLB, without reference material, the trainee must locate components and accessories of the propulsion system following the steps listed below:

<b>Performance Criteria</b>	<b>Completed (Initials)</b>
1. Locate the main engines and state the following: <ol style="list-style-type: none"> <li>a. Make and model.</li> <li>b. Horsepower of each engine.</li> <li>c. <i>Cruising</i> and maximum engine RPMs.</li> <li>d. Rotation of each engine.</li> <li>e. Lube oil capacity of each engine.</li> <li>f. Describe the Airsep system.</li> </ol>	_____
2. Describe the fuel oil system: <ol style="list-style-type: none"> <li>a. State the location of the fuel tank.</li> <li>b. State the capacity of the fuel tank.</li> <li>c. State the usable capacity of the tank.</li> <li>d. Locate the fill tube, sounding rod and fuel gauge.</li> <li>e. Locate the fuel tank vent.</li> <li>f. Locate the manual emergency shutoff valves.</li> <li>g. Locate the primary filters, secondary filters, priming pump and stripping port.</li> <li>h. Locate the fuel pump, ECM cooler plate and fuel cooler.</li> <li>i. Locate and state the size and purpose of the restricted orifice.</li> </ol>	_____
3. Describe the engine cooling system: <ol style="list-style-type: none"> <li>a. State the type of system used.</li> <li>b. Locate the sea suction valves and the sea strainers.</li> <li>c. State how the engines are cooled.</li> <li>d. State how the reduction gears are cooled.</li> <li>e. State how the exhaust gases are cooled.</li> <li>f. State how the raw water system is protected from corrosion.</li> <li>g. Locate and state the purpose of the raw water pump, restrictor plate and shaft seal.</li> <li>h. State the jacket water capacity of the engines.</li> <li>i. Locate the jacket water pump, oil cooler, aftercooler, thermostats and hot start.</li> </ol>	_____
4. State the following parameters for <i>idle</i> and <i>cruising</i> : <ol style="list-style-type: none"> <li>a. Engine jacket water temperature.</li> <li>b. Engine lube oil pressure.</li> <li>c. Reduction gear clutch apply pressure.</li> <li>d. Reduction gear lube oil temperature.</li> </ol>	_____
5. Locate and state the purpose of the following engine stop systems: <ol style="list-style-type: none"> <li>a. Engine stop buttons (switches).</li> <li>b. Emergency fuel cutout valves.</li> <li>c. Emergency air shutdowns.</li> </ol>	_____



Performance Criteria	Completed (Initials)
<p>6. Locate the reduction gears and state the following:</p> <ul style="list-style-type: none"> <li>a. Make, model and configuration of reduction gear.</li> <li>b. Type of coupling that attaches the cardan shaft to engine.</li> <li>c. Gear ratio in <i>forward</i> and <i>reverse</i>.</li> <li>d. Lube oil dipstick and where oil is added.</li> <li>e. Lube oil capacity of the reduction gears and what type of oil is used.</li> <li>f. Duplex lube oil filters.</li> <li>g. Dirty lube oil filter indicator.</li> <li>h. Sinter filter.</li> <li>i. COME HOME device cover plates.</li> <li>j. Describe how to shift and clean lube oil filters.</li> <li>k. Explain the purpose of the delay in reduction gear engagement.</li> <li>l. Explain how to engage reduction gear locally with the manual control valve emergency buttons.</li> </ul>	_____
<p>7. Describe the propeller shafts and propellers, stating the following:</p> <ul style="list-style-type: none"> <li>a. Diameter of shaft.</li> <li>b. Purpose of the shaft seal.</li> <li>c. Propeller diameter and pitch.</li> <li>d. Number of propeller blades.</li> <li>e. Direction of propeller shaft rotation in <i>forward</i> and <i>reverse</i>.</li> </ul>	_____
<p>8. Locate and state the purpose of the following Detroit Diesel Electronically Controlled (DDEC) components:</p> <ul style="list-style-type: none"> <li>a. Throttle control heads.</li> <li>b. Station control panels.</li> <li>c. Electronic display modules (EDMs).</li> <li>d. Emergency backup panel.</li> <li>e. Control station interface modules (CSIMs).</li> <li>f. Engine room interface module (ERIM).</li> <li>g. Electronic gear interface modules (EGIMs).</li> <li>h. Marine interface modules (MIMs).</li> <li>i. Electronic control modules (ECMs).</li> <li>j. Electronic unit injectors (EUIs).</li> <li>k. Synchronous reference sensors (SRSs).</li> <li>l. Timing reference sensors (TRSs).</li> <li>m. Pulse wheels.</li> <li>n. Turbo boost sensors.</li> <li>o. Coolant temperature sensors.</li> <li>p. Coolant level sensors.</li> <li>q. Oil pressure sensors.</li> <li>r. Oil temperature sensors.</li> <li>s. Fuel pressure sensors.</li> <li>t. Fuel temperature sensors.</li> </ul>	_____

Instructor

Date

Comments

**TASK ENG-02-02-47MLB    Locate Components and Accessories of the 47' MLB Auxiliary System****References**

- a. *47' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.25 (series)
- b. 47' Motor Lifeboat Technical Publication Numbers 3359-3360

**Conditions**

The task will be performed pierside, while normal unit training and lecture programs pertaining to boat operations are being conducted. Where practicable, the pierside instructions should be followed by related underway exercises.

**Standards**

Aboard a 47' MLB, without reference material, the trainee must locate components and accessories of the auxiliary systems following the steps listed below:

Performance Criteria	Completed (Initials)
1. Locate and state the purpose of the following hydraulic steering system components: <ul style="list-style-type: none"> <li>a. Steering pumps.</li> <li>b. Reservoir/filter/cooler assembly.</li> <li>c. Steering control valve.</li> <li>d. Auto pilot pump.</li> <li>e. Helm unit.</li> <li>f. Jog levers.</li> <li>g. Servo/power cylinder.</li> <li>h. Steering feedback units.</li> <li>i. Steering pressure alarm and components.</li> <li>j. State the capacity and what type fluid is used in the steering system.</li> <li>k. Describe the two hydraulic circuits that are used in the steering system.</li> <li>l. State the head pressure of the system.</li> <li>m. State the relief pressure of the steering system and of the servo/power cylinder.</li> </ul>	_____
2. Locate and state the purpose of the following heating, ventilation, and air conditioning (HVAC) system components: <ul style="list-style-type: none"> <li>a. Sea suction valve.</li> <li>b. Sea strainer.</li> <li>c. Raw water pumps.</li> <li>d. HVAC raw water piping.</li> <li>e. HVAC units.</li> <li>f. HVAC control panel.</li> <li>g. HVAC system circuit breakers/switches.</li> <li>h. Explain how the HVAC unit both cools and heats.</li> <li>i. Locate and describe the 47' MLB ventilation intakes and ducting.</li> </ul>	_____
3. Locate and state the purpose of the fire detection and suppression system components: <ul style="list-style-type: none"> <li>a. Mechanical actuators/nitrogen bottles.</li> <li>b. CO<sub>2</sub> bottles.</li> <li>c. Siren.</li> <li>d. Pressure switch #1.</li> <li>e. Pressure switch #2.</li> <li>f. Pressure switch #3.</li> <li>g. Engine room air inlet damper.</li> <li>h. 30-second delay bottle.</li> <li>i. Strobe light.</li> <li>j. CO<sub>2</sub> system status panel.</li> <li>k. Discharge nozzle.</li> </ul>	_____



Performance Criteria	Completed (Initials)
l. Fire alarm warning lights. m. Explain how the system works when actuated. n. Smoke and heat detector.	
4. Locate and state the purpose of the fixed dewatering system components: a. Bilge pumps. b. Water sensor switches. c. Bilge pump control and alarm panel. d. Bilge pump overboard discharge points. e. Engine room dewatering standpipe.	_____
5. Locate and state the purpose of the emergency window release system components: a. Compressor and reservoir assembly. b. System parameters. c. Latch assembly. d. Water sensor switches. e. System test switch. f. CO <sub>2</sub> backup actuator.	_____

**Instructor**

**Date**

**Comments**

**TASK ENG-02-03-47MLB      Locate Components and Accessories of the 47' MLB Electrical System****References**

- a. *47' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.25 (series)
- b. 47' Motor Lifeboat Technical Publication Numbers 3355-3379

**Conditions**

The task will be performed pierside, while normal unit training and lecture programs pertaining to boat operations are being conducted. Where practicable, the pierside instructions should be followed by related underway exercises.

**Standards**

Aboard a 47' MLB, without reference material, the trainee must locate components and accessories of the electrical system following the steps listed below:

Performance Criteria	Completed (Initials)
1. Locate the following DC power equipment: <ul style="list-style-type: none"> <li>a. Batteries.</li> <li>b. Alternators.</li> <li>c. DC power panels and their voltages.</li> <li>d. Main breakers.</li> <li>e. Battery cutout switches.</li> <li>f. Voltage regulators.</li> <li>g. Lube oil pressure switches.</li> <li>h. Multi-battery isolators.</li> <li>i. Shore-tie battery charger.</li> </ul>	_____
2. Locate the following AC power equipment: <ul style="list-style-type: none"> <li>a. Shore-tie box.</li> <li>b. AC power panel.</li> <li>c. Generators.</li> <li>d. Main breaker.</li> <li>e. Seapower control unit.</li> </ul>	_____
3. State the power output and purpose of the alternators and generators.	_____
4. Explain how the batteries are connected.	_____
5. State when the batteries are paralleled.	_____
6. Explain the purpose of the start batteries. Describe the results of a battery failure or low voltage in the start batteries.	_____
7. Explain the purpose of the service batteries. Describe the results of a battery failure or low voltage in the service batteries.	_____
8. Explain the purpose and function of the multi-battery isolators. Describe the results of a failed or improperly installed multi-battery isolator.	_____
9. Describe the operation of the battery charging system.	_____

**Instructor****Date****Comments**

**TASK ENG-02-04-47MLB      Locate Installed Equipment and Fittings on the 47' MLB****Reference**

- a. *47' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.25 (series)
- b. 47' Motor Lifeboat Technical Publication Numbers 3355-3379

**Conditions**

The task will be performed pierside, while normal unit training and lecture programs pertaining to small boat operations are being conducted. Where practicable, the pierside instructions should be followed by related underway exercises.

**Standards**

Aboard a 47' MLB, without reference material, the trainee must locate and state the purpose of the equipment and fittings which are within the compartment and/or part of the MLB structure.

Performance Criteria	Completed (Initials)
1. FOREPEAK: <ul style="list-style-type: none"> <li>a. Inspection cover.</li> <li>b. Drain plug.</li> <li>c. Vent.</li> </ul>	_____
2. FORWARD COMPARTMENT: <ul style="list-style-type: none"> <li>a. Intercom.</li> <li>b. Bilge pump and water sensor switch.</li> <li>c. All outfit equipment.</li> <li>d. Bilge pump overboard discharge.</li> <li>e. Vents.</li> </ul>	_____
3. AUXILIARY MACHINERY SPACE: <ul style="list-style-type: none"> <li>a. 12-volt batteries.</li> <li>b. 12- and 24-volt power panels.</li> <li>c. CO<sub>2</sub> bottles.</li> <li>d. Bilge pump and water sensor switch.</li> <li>e. Isolation transformer.</li> <li>f. ERIM and EGIMs.</li> <li>g. Sea power AC circuit breakers.</li> <li>h. HVAC equipment.</li> <li>i. Battery charger.</li> <li>j. 120-VAC power panel.</li> <li>k. Bilge pump overboard discharge.</li> <li>l. Sea power user panels.</li> <li>m. Vents and vent fan motor.</li> <li>n. 12-volt power converter.</li> </ul>	_____
4. SURVIVOR'S COMPARTMENT: <ul style="list-style-type: none"> <li>a. Intercom.</li> <li>b. Fire extinguishers.</li> <li>c. CO<sub>2</sub> mechanical actuator/nitrogen bottle.</li> <li>d. Grounding stick.</li> <li>e. HVAC unit and control panel.</li> <li>f. CO<sub>2</sub> system equipment.</li> <li>g. Battery cutout switches.</li> <li>h. Emergency fuel cutout valve pull handles.</li> <li>i. Console vent fan.</li> <li>j. All outfit equipment.</li> </ul>	_____

Performance Criteria	Completed (Initials)
5. REDUCTION GEAR SPACE: a. Transducer. b. Propeller shaft seals. c. Bilge pumps and water sensor switches. d. Fuel stripping port. e. Speed log. f. Cardan shaft seals. g. Fuel tank inspection covers. h. HVAC/sink overboard discharge. i. All outfit equipment.	_____
6. LAZARETTE: a. Bilge pump and water sensor switch. b. Standpipes. c. Servo/power cylinder. d. Rudder feedback units. e. Bilge pump overboard discharge. f. Rudder post glands. g. Tie rod. h. Vents.	_____
7. ENCLOSED BRIDGE: a. HF, VHF/FM radios. b. Heading indicator. c. Rudder angle indicator. d. Autopilot. e. Radar. f. Chart plotter. g. Electronic display modules (EDMs). h. Jog levers. i. Throttle controls. j. Throttle station control panel. k. Low steering pressure alarm and warning light. l. Fire alarm warning light and test switch. m. CO <sub>2</sub> mechanical actuator/nitrogen bottle. n. Emergency backup panel. o. Autopilot select button. p. HVAC unit and control panel. q. Bilge pump alarm and control panels. r. All outfit equipment. s. VHF direction finder. t. Engine start/stop buttons (switches). u. HVAC unit and control panel. v. Global positioning system (GPS). w. Chart table. x. Fire extinguishers. y. Spotlight/light panels. z. Emergency window release components. aa. Navigation light control panel. bb. Fuel gauge.	_____



Performance Criteria	Completed (Initials)
<ul style="list-style-type: none"> <li>cc. Console access hatches.</li> <li>dd. Depth finder.</li> <li>ee. Engine air shutdown pull handles.</li> <li>ff. Fluxgate compasses.</li> <li>gg. Window wiper/washer controls.</li> <li>hh. Window heaters/blowers.</li> <li>ii. Vent and deck drains.</li> </ul>	
<p>8. MAST/MAST PLATFORM:</p> <ul style="list-style-type: none"> <li>a. Radar antenna.</li> <li>b. Horn.</li> <li>c. Blue light.</li> <li>d. Deck working lights.</li> <li>e. Wiring junction box.</li> <li>f. VHF-FM antenna.</li> <li>g. GPS antenna.</li> <li>h. Loudhailer speaker.</li> <li>i. Mooring lights.</li> <li>j. Navigation lights.</li> <li>k. Searchlight.</li> <li>l. VHF-FM DF antenna.</li> </ul>	_____
<p>9. MAIN DECK/DECK STORAGE:</p> <ul style="list-style-type: none"> <li>a. Escape hatch.</li> <li>b. Portable dewatering pump sea suction.</li> <li>c. Window wash reservoir.</li> <li>d. Anchor.</li> <li>e. Overboard sink drain.</li> <li>f. Vent louvers.</li> <li>g. Shore-tie receptacle.</li> <li>h. HVAC raw water discharge ports.</li> <li>i. Engine room bilge suction.</li> <li>j. Portable dewatering pump.</li> <li>k. Window washer pump.</li> <li>l. Fuel tank vent.</li> <li>m. Enclosed bridge drains.</li> <li>n. Deck lighting.</li> <li>o. Fuel fill/sounding rod.</li> <li>p. Bilge pump discharge ports.</li> </ul>	_____
<p>10. OPEN BRIDGE:</p> <ul style="list-style-type: none"> <li>a. Ring buoys.</li> <li>b. Throw bags.</li> <li>c. Binoculars.</li> <li>d. Bell mounting bracket.</li> <li>e. Docking lights.</li> <li>f. HF antenna.</li> <li>g. Halyard cleat.</li> <li>h. Port console:               <ul style="list-style-type: none"> <li>(1) Rudder angle indicator.</li> <li>(2) Throttle station control panel.</li> </ul> </li> </ul>	_____

Performance Criteria	Completed (Initials)
<ul style="list-style-type: none"> <li>(3) Engine tachometers.</li> <li>(4) Throttle controls.</li> <li>(5) Engine start/stop buttons (switches).</li> <li>(6) Jog lever.</li> <li>(7) CO<sub>2</sub> mechanical actuator/nitrogen bottle.</li> <li>(8) Dimmer switch.</li> <li>(9) Remote spot light connection.</li> <li>(10) Console drainball.</li> <li>i. Center console: <ul style="list-style-type: none"> <li>(1) Depth finder.</li> <li>(2) Digital compass.</li> <li>(3) Fire alarm, warning light and test switch.</li> <li>(4) Engine air shutdown pull handles.</li> <li>(5) Electronic display modules (EDMs).</li> <li>(6) Low steering pressure alarm light.</li> <li>(7) Radar.</li> <li>(8) Speakers.</li> </ul> </li> <li>j. Starboard console: <ul style="list-style-type: none"> <li>(1) Searchlight control panel.</li> <li>(2) Electronic enclosure.</li> <li>(3) VHF radio and microphone.</li> <li>(4) Loudhailer microphone.</li> <li>(5) Rudder angle indicator.</li> <li>(6) Auto pilot.</li> <li>(7) Dimmer switch.</li> <li>(8) Deck/spotlight switches.</li> <li>(9) Throttle controls.</li> <li>(10) Console drain ball.</li> <li>(11) Engine start/stop buttons (switches).</li> <li>(12) Helm unit pump and helm wheel.</li> <li>(13) Magnetic compass.</li> <li>(14) Throttle station control panel.</li> <li>(15) GPS.</li> </ul> </li> </ul>	

**Instructor**

**Date**

**Comments**

**TASK ENG-02-05-47MLB****Set Watertight Integrity Aboard the 47' MLB****References**

- a. *47' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.25 (series)

**Conditions**

The task will be performed pierside, while normal unit training and lecture programs pertaining to small boat operations are being conducted. Where practicable, the pierside instructions should be followed by related underway exercises.

**Standards**

The trainee, without error, must state the number and location of all watertight compartments, hatches and doors aboard a 47' MLB. The trainee must secure all hatches and doors for watertightness.

Performance Criteria	Completed (Initials)
1. State the purpose of watertight integrity.	_____
2. State the number and location of the following watertight closure devices and compartments aboard a MLB: <ul style="list-style-type: none"> <li>a. Watertight hatches.</li> <li>b. Quick-acting watertight doors.</li> <li>c. Watertight compartments.</li> </ul>	_____
3. Set watertight integrity.	_____

**Instructor****Date****Comments**

**TASK ENG-02-06-47MLB      List the Disabling Casualties and Restrictive Discrepancies that Prevent the 47' MLB from Getting Underway**

**References**

- a. *47' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.25 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

The task will be performed pierside, while normal unit training and lecture programs pertaining to small boat operations are being conducted. Where practicable, the pierside instructions should be followed by related underway exercises.

**Standards**

With reference material and without error, the trainee must state the equipment that, should a casualty or discrepancy occur, will prevent an MLB from getting underway for an operational mission. The trainee must know the difference between disabling casualties and restrictive discrepancies. The trainee must know what steps must be followed when a casualty or discrepancy is found.

Performance Criteria	Completed (Initials)
1. State the equipment that is listed in <i>Appendix D (Disabling Casualties)</i> , <i>47' MLB Operator's Handbook</i> .	_____
2. State the equipment that is listed in <i>Appendix E (Restrictive Discrepancies)</i> , <i>47' MLB Operator's Handbook</i> .	_____

**Instructor**

**Date**

**Comments**


**TASK ENG-02-07-47MLB Conduct a Pre-Start Check-Off on the 47' MLB**
**References**

- a. 47' Motor Lifeboat Operator's Handbook, COMDTINST M16114.25 (series)
- b. 47' Motor Lifeboat Publication Number 3355

**Conditions**

The task will be performed pierside when making preparations for getting underway, or while normal unit training and lecture programs pertaining to boat operations are being conducted. The trainee will perform the duties of the engineer under the direct supervision of an instructor.

**Standards**

The following steps must be properly completed by the trainee in order to successfully complete this task:

Performance Criteria	Completed (Initials)
1. Inspect bilges for excessive amounts of water. Look for signs of spilled fuel or oils. Pump and clean as necessary.	_____
2. Sound fuel oil tank. Ensure fuel oil is maintained at 95 percent (373 gallons). Fuel sounding tube is on the aft deck, port side forward.	_____
3. Check the following fluid levels: a. Engine lube oil level filled to FULL mark. b. Reduction gear lube oil filled at least to FULL mark. c. Engine coolant sight glass filled to half mark of coolant recovery bottle. d. Hydraulic fluid reservoir filled between ½ and ¾.	_____
<b>NOTE</b> Coolant level must be rechecked after the engine warms up and when the boat stops to take on fuel.	_____
<b>NOTE</b> Reduction gear oil will normally be above the H mark when the reduction gear is not turning. The reduction gear oil level must be checked again with the engine running at low idle. At low idle, the level must be between the L and the H marks on the dipstick.	_____
4. Ensure air intake is clear and engine room ventilation damper is <i>open</i> .	_____
5. Ensure hydraulic fluid reservoir pre-charge pressure is 20-30 PSI.	_____
6. Open sea suction valves and check sea strainers for cleanliness. Ensure sea strainer handle is selected to one side.	_____
7. Ensure fuel supply cutout valves are <i>open</i> to fuel tank.	_____
8. Check all belts for proper tension and condition.	_____
9. Energize engine start safety cutout switches ( <i>on</i> position) in engine room.	_____
10. Secure dockside electrical power and disconnect shore-tie from the boat. Secure all breakers in the 120-volt AC power panel.	_____
11. Energize the start and service battery cutout switches in the survivor's compartment.	_____
12. Energize the 12-volt DC power converter main breaker.	_____
13. Ensure the main breaker and the following breakers on the 24-volt DC power panel are <i>on</i> : a. DDEC/ignition switch (port). b. DDEC/ignition switch (starboard). c. Engine room interface module. d. Engine starting. e. Engine alarms/fuel gauge.	_____

Performance Criteria	Completed (Initials)
<ul style="list-style-type: none"> <li>f. Marine interface module (port).</li> <li>g. Marine interface module (starboard).</li> <li>h. Engine gear interface module (port).</li> <li>i. Engine gear interface module (starboard).</li> <li>j. CO<sub>2</sub> system.</li> <li>k. Bilge alarm horn.</li> <li>l. Bilge pump control alarm.</li> <li>m. Auxiliary machinery space lights.</li> <li>n. Engine room lights.</li> <li>o. Forward compartment lights.</li> <li>p. Enclosed bridge lights.</li> <li>q. Console lights.</li> </ul>	
14. Ensure HVAC system raw water cooling valve is <i>open</i> .	_____

**Instructor** \_\_\_\_\_ **Date** \_\_\_\_\_

**Comments** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**TASK ENG-02-08-47MLB      Start the 47' MLB****References**





- a. 47' Motor Lifeboat Operator's Handbook, COMDTINST M16114.25 (series)

**Conditions**

The task will be performed pierside, when making preparations for getting underway, or while normal unit training and lecture programs pertaining to small boat operations are being conducted. The trainee will perform the duties of the engineer under the direct supervision of an instructor.

**Standards**

The following steps must be properly completed by the trainee in order to successfully complete this task:

Performance Criteria	Completed (Initials)
1. The following procedures must be followed for starting the engines:	_____
a. Set throttle levers to <i>neutral</i> position at all operating stations.	_____
b. Close the ENGINE START switches on the overhead console of the enclosed bridge. The Electronic Display Module (EDM) should illuminate and sound a brief audible alarm while running system and wiring checks. A display of current engine status follows.	_____
c. Close (turn on) the DDEC ignition switch on the center console of the enclosed bridge.	_____
d. Depress and hold the ENGINE START button (switch) on the enclosed bridge console until the engine is started. Check the EDM for normal initial starting parameters. The engine will idle at ~750 RPM until the oil temperature reaches 112 °F.	_____
<b>NOTE</b>  If the start system batteries will not crank over the engines, energize the battery parallel switch.	
e. Repeat the previous two steps for the second engine.	_____
f. Ensure raw water flow through the engines by observing overboard discharge.	_____
g. Visually check the gauges in the engine room for proper operation and operating ranges.	_____
<b>CAUTION !</b>  If proper oil pressure is not evident, immediately secure engine and investigate.	
2. Complete the following steps prior to getting underway:	
a. Close (turn on) all of the remaining breakers on the 24-volt DC and 12-volt DC power panels.	_____
b. Energize and test all installed electronic components.	_____
c. Conduct a test on all jog levers and the helm wheel. Ensure stop-to-stop movement on the rudder angle indicator.	_____
d. When engines have warmed up (they will have slowed to 600 RPMs) and with the throttle levers in <i>neutral</i> , press the STATION ACTIVE button on throttle control panel and release. This activates the system control for that helm position. The red STATION ACTIVE light should illuminate. The EDM should also display which station has control.	_____
e. Test throttle operation in <i>forward</i> and <i>reverse</i> .	_____
f. Momentarily depress the STATION ACTIVE button again to deactivate that station's control.	_____
<b>NOTE</b>  Depressing and holding the STATION ACTIVE button for more than one second disables all control stations; gearboxes return to <i>neutral</i> and engines return to <i>idle</i> . To regain control, place the throttle levers in the <i>neutral</i> position and momentarily depress the STATION ACTIVE button again.	
<b>NOTE</b>  The STATION ACTIVE light will flash during station transfer if the throttle position at the new station is not matched to the old station.	
g. Repeat steps d through f at each helm control station.	_____
h. Ensure gear is properly stowed and watertight integrity is set.	_____

Performance Criteria	Completed (Initials)
i. Inform coxswain on the status of all engineering and electronic systems and if the boat is ready to get underway.	_____

**Instructor** \_\_\_\_\_ **Date** \_\_\_\_\_

**Comments** \_\_\_\_\_

\_\_\_\_\_

**TASK ENG-02-09-47MLB    Secure the 47' MLB After Operations****References**




a. *47' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.25 (series)


**Conditions**

The task will be performed pierside, when making preparations for getting underway, or while normal unit training and lecture programs pertaining to small boat operations are being conducted. The trainee will perform the duties of the engineer under the direct supervision of an instructor.

**Standards**

The following steps should be completed to return the boat to a ready status:

Performance Criteria	Completed (Initials)
1. Secure all electrical and electronic components on the open bridge.	_____
2. Secure all electrical and electronic components in the enclosed bridge.	_____
3. Secure engines using push buttons in the enclosed bridge.	_____
4. Secure start system cutout switches on the overhead console and the DDEC ignition switch on the center console in the enclosed bridge.	_____
5. Install shore-tie cable to the boat and energize dock side shore power.	_____
6. Energize equipment breakers in the 120-volt AC power panel in the auxiliary machinery space. Ensure battery charger is operating normally.	_____
7. Secure all breakers in the 24-volt power panel in the auxiliary machinery space except for compartment lighting and bilge pump system.	_____
8. Secure all electronic equipment breakers in the 12-volt power panel in the auxiliary machinery space.	_____
9. Secure HVAC cooling system valve in the auxiliary machinery space starboard side.	_____
10. Secure start system battery cutout switch in the survivor's compartment.	_____
11. Secure sea suction valves for the engines under the ladder in the engine room.	_____
12. Secure engine start safety cutout switches ( <i>off</i> position) in the engine room.	_____
13. Check all machinery fluid levels and refill as necessary.	_____
<b>NOTE</b>  It may be necessary to wait 30 minutes to obtain an accurate reading on engine lube oil levels.	_____
<b>CAUTION !</b>  Do not check engine coolant levels until temperature has dropped to 160 °F or below.	_____
14. Conduct a visual inspection of the engine room and machinery spaces and their bilges for any obvious abnormalities.	_____
15. Clean engine room bilges and machinery.	_____
16. Sound fuel oil tank and refill to 95 percent (373 gallons).	_____
17. Secure all watertight doors, hatches, and covers.	_____
18. Wash the boat down with freshwater.	_____
<b>NOTE</b>  Keeping the boat clean and neat is very important to control corrosion. Having aluminum in contact with dissimilar metal, particularly a copper alloy can cause major corrosion problems. Something as small as a penny left in the bilge can cause serious damage. Maintaining corrosion control is the responsibility of everyone in the crew.	_____

Performance Criteria		Completed (Initials)
<b>NOTE</b> 	The mission is not complete until the boat is ready for the next mission.	_____

**Instructor** \_\_\_\_\_ **Date** \_\_\_\_\_

**Comments** \_\_\_\_\_

\_\_\_\_\_

**TASK ENG-02-10-47MLB    Capsizing****References**





- a. *47' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.25 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Upon re-righting, check to see if both engines are running and if the coxswain has engine and steering control. Assist coxswain in regaining control of the boat.	_____
2. When in safe water and upon direction of the coxswain, the boat engineer should go below to check for damage.	_____
3. Investigate the condition of the engine room by looking through the window in the watertight door. The engine room may be coated with water and oil, presenting a fire hazard.	_____
4. Begin dewatering the vessel by energizing all of the installed electric pumps. If the flooding is too severe to be handled by the electric bilge pumps, rig the portable dewatering pump on the aft deck and connect the suction line to the engine room suction standpipe.	_____
5. Once dewatering is complete, check the oil in both main engines (engines must be secured to ensure an accurate reading). Add oil as necessary.	_____
<b>NOTE</b>  Engines should be shut down to check oil level; if circumstances make securing the engines inappropriate, wait to check the oil levels until the situation has further stabilized. In the mean time, keep a close eye on the engine oil pressure.	
6. Closely check the material condition of each compartment. Report results to the coxswain.	_____
7. After damage has been assessed, determine whether it is safe to proceed with the mission or whether to return to the unit.	_____
8. Upon returning to the station, all electronic and electrical equipment must be tested and cleaned. When applicable, electronic or electrical components will be replaced.	_____
<b>NOTE</b>  A backup means of communications is critical after a capsizing or knockdown. A portable VHF/FM radio is the best means of passing critical situation reports immediately following this type of situation.	
<b>WARNING</b>  Do not hook up the shore-tie. Electronic equipment in all below decks spaces may be soaked with water.	
<b>NOTE</b>  All compartments must be inspected for water intrusion and damage. Each compartment should be thoroughly wiped or washed down as appropriate. All wiring must be cleaned, dried and inspected. Once complete, all electrical equipment must be tested thoroughly. The engine room must be washed down and all insulation material in the survivor's compartment must be inspected. All fluids and associated filters, such as reduction gear, hydraulic system, and main engine oil should be replaced whenever the possibility of contamination has occurred.	

**Instructor****Date****Comments**

**TASK ENG-02-11-47MLB Striking a Submerged Object**

**References**


- a. *47' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.25 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Reduce engine RPMs to <i>neutral</i> , and try to determine what was hit by the boat; inform the rest of the crew.	_____
2. The engineer and a crew member should proceed to the survivor's compartment to check reduction gear spaces and shafting for vibration and damage. Ensure all propeller shaft coupling bolts and retaining lock wires are in place and tight. As the coxswain places the engines in gear, check propeller shaft seals for excessive leakage.	_____
3. The crew member should check all forward compartments for damage. The engineer should check the engine room and lazarette for damage. Make reports to coxswain.	_____
<b>NOTE</b>  If possible, the boat should be hoisted to determine extent of damage, especially if there is a vibration.	_____
4. Individually bring up the engine RPMs to determine range and severity of vibration checking both <i>forward</i> and <i>reverse</i> gears.	_____
5. Maintain engine RPMs below range of vibration. If vibration is too severe, place the shaft into <i>neutral</i> or secure engine.	_____
6. Conduct steering check by turning helm hard port and starboard. Check for normal rudder movement stop-to-stop.	_____

**Instructor**

**Date**

**Comments**

**TASK ENG-02-12-47MLB      Steering Casualty****References**


- a. *47' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.25 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Reduce engine RPM to <i>clutch ahead</i> and inform the crew. Ensure the steering station is active.	_____
2. If the steering gear low pressure alarm/light is energized, secure both engines. If there is no hydraulic oil pressure or no oil in the reservoir, both engines must be secured to avoid damage to pumps and/or engines.	_____
3. Test each steering station individually. Check the autopilot to be sure it is not energized (depress the autopilot select switch). Secure power to the autopilot if necessary.	_____
4. Engineer should enter the engine room, if safe, and look for obvious hydraulic leaks, check bilge, check hydraulic pressure gauge and reservoir level. Reservoir gauge should read 20-30 PSI. Power system gauge should read 150-250 PSI. Reservoir level should be ½ -¾ full.	_____
<b>WARNING</b>  There is a steering pump attached to each engine. This will allow the coxswain to steer the boat with only one engine running as long as the hydraulic system is intact and full. The helm unit will work only if there is fluid in the system. The steering pump will be destroyed and possibly cause engine damage if either engine is run with no fluid in the power steering system!	

**Instructor****Date****Comments**

**TASK ENG-02-13-47MLB      Reduction Gear Failure****References**



- a. *47' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.25 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Bring the throttles back to <i>neutral</i> , ensure the active light is lit on the throttle station control panel in use. If the light is not lit, attempt to use another throttle station. If this is ineffective, secure the affected engine(s).	_____
2. The engineer should proceed to the auxiliary machinery space and check both Gear Interface Module breakers on the 24-volt power panel to ensure the breakers have not tripped.	_____
3. The engineer should then proceed to the survivor's compartment and remove the deck plates to examine the affected reduction gear.	_____
4. Check the reduction gear lube oil level. Check the dirty oil filter indicator on the duplex filter and shift the handle to the other filter if necessary. Check all reduction gear sensors to ensure they are properly connected and secure.	_____
5. If no leaks are present and the oil level is full, restart the engine and observe clutch apply pressure (230-290 PSI when the clutch is engaged).	_____
6. If the clutch apply pressure is not sufficient, secure the engine and reduction gear.	_____
7. If all mechanical checks have been made, proceed to troubleshooting the electronic controls.	_____
<b>NOTE</b>  In the event of reduction gear electronic control failure, the reduction gear control valve can be operated manually by pushing in on the button located at the solenoid end cap and locked into position by inserting the locking pin into the hole at the top of the end cap.	_____
8. Attempt to take throttle control again at each of the throttle control stations.	_____
9. If control cannot be taken from any of the stations, the coxswain should proceed to the enclosed bridge and energize the emergency engine control toggle mounted on the lower console just above the throttles. This system bypasses all throttle sensors.	_____
10. The coxswain can control the reduction gear direction by using the <i>forward/neutral/reverse</i> toggle and can control engine RPMs by turning the rheostat for each engine.	_____
<b>NOTE</b>  If a long distance must be traveled to return to a station, each reduction gear is fitted with a COME HOME device that can lock the forward clutch packs together for operation. Use of the COME HOME device should be limited, as it will result in the need to have the reduction gear removed and repaired no matter what the original cause of the casualty.	_____

**Instructor****Date****Comments**

**TASK ENG-02-14-47MLB      Fire in the Engine Room****References**


- a. *47' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.25 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms. Given an MLB with required fire fighting equipment and installed systems, take corrective action.

**Standards**

Trainee shall demonstrate proper procedures for extinguishing an engine room fire with the fixed CO<sub>2</sub> fire suppression system when the engine room fire is too large to be extinguished with the portable fire extinguishers aboard, in accordance with the steps below:

Performance Criteria	Completed (Initials)
1. The coxswain should secure the engines, inform all crew members and notify the station.	_____
2. The engineer should proceed to the survivor's compartment and ensure the engine room watertight door is tightly closed, then secure the fuel supply by pulling the emergency fuel cutout valve handles.	_____
3. The engineer should proceed to the auxiliary machinery space and secure all the electrical breakers on the DC power panel with the exception of the VHF-FM radio.	_____
4. After the power circuits and fuel system are secure, energize the CO <sub>2</sub> flooding system by releasing the locking pin and depressing the handle. There is a 30-second delay built into the CO <sub>2</sub> system; this delay can be manually overridden by pulling the CO <sub>2</sub> release handle on the delay system mounted on the starboard bulkhead of the survivor's compartment	_____
<b>WARNING</b>  It is extremely dangerous to enter a compartment during or after a fire. After the engine room has been flooded with CO <sub>2</sub> , extensive ventilation is necessary to ensure safety when entering, however any introduction of oxygen into the compartment may ignite a fire reflash. Keep the space sealed until towed ashore and secured.	_____
5. Ensure the engine room air damper for the main engine room air intake vent has completely closed. Secure the aft engine room air vents by closing the handles located in the aft port and starboard deck boxes.	_____
6. Keep the engine room secured until towed ashore and secured.	_____
7. As much as possible, stay off of the after deck as the heat may have caused structural damage.	_____

**Instructor****Date****Comments**

**TASK ENG-02-15-47MLB Fire in the Auxiliary Machinery Space**

**References**



- a. *47' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.25 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria		Completed (Initials)
1.	The coxswain should secure the engines, inform all crew members and notify the station.	_____
2.	The engineer should proceed to the survivor's compartment and secure the battery cutout switches on the port forward bulkhead.	_____
3.	Ensure that the watertight doors leading to the auxiliary machinery space are closed.	_____
4.	Keep the auxiliary machinery space sealed until towed to safe moorage and secured.	_____
<b>WARNING</b> 	In the event of a fire in the space, do not enter the auxiliary machinery space compartment under any circumstances. There is not an installed fire fighting system for this compartment.	
<b>WARNING</b> 	Do not hook up the shore-tie. Complete inspection of the electrical system should be made once the compartment has been deemed safe to enter.	

**Instructor**

**Date**

**Comments**

**TASK ENG-02-16-47MLB      Loss of Control of Engine RPMs****References**


- a. *47' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.25 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Ensure the active light is lit for the throttle control station in use.	_____
2. Bring the engine control back to <i>clutch ahead</i> .	_____
3. If this fails to control the engine RPMs, switch to a different control station and attempt to take control.	_____
4. If this fails, push and hold down the engine STOP button for the affected engine.	_____
5. If the engine fails to secure, the engineer should proceed to the survivor's compartment and pull the fuel cutoff valve handle for the affected engine and allow the engine to run out of fuel.	_____
6. If time does not allow for the affected engine to run out of fuel, or if the fuel cutoff fails to secure the engine, the coxswain should pull the emergency air shutdown for the affected engine.	_____
7. Do not restart the engine until the problem has been corrected.	_____
<b>WARNING</b>  Do not use the CO <sub>2</sub> system to secure the engine. Depleting the fire fighting capabilities of the boat can be dangerous. Use of the CO <sub>2</sub> system will also shut down both engines.	

**Instructor****Date****Comments**

**TASK ENG-02-17-47MLB      Loss of Fuel Oil Pressure**

**References**

- a. *47' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.25 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. The coxswain should reduce RPMs to <i>clutch ahead</i> , determine which engine has lost power and inform the crew.	_____
2. The engineer should proceed to the engine room and look through the window in the engine room door to ensure that it is safe to enter.	_____
3. If it is safe to enter, check the bilge for the presence of any fuel oil.	_____
4. Check the emergency fuel cutout valves to ensure that they are open.	_____
5. Check the primary fuel filter for accumulated sediment and water in the bowls. Replace if suspect. Re-prime the system.	_____
6. Check the entire fuel system for obvious leaks; check fuel tank level.	_____
7. Re-start the engine and check for proper operation.	_____
8. If the problem still persists, secure the engine.	_____

**Instructor**

**Date**

**Comments**

**TASK ENG-02-18-47MLB      Loss of Lube Oil Pressure****References**



- a. *47' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.25 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. The coxswain should reduce the engines to <i>clutch ahead</i> , determine which engine has loss of lube oil pressure.	_____
<b>NOTE</b>  The lube oil alarm is variable, which means that at any given engine RPM, the oil pressure must be within a certain range or the alarm will sound. The lube oil alarm may be directly related to engine temperature; an overheating engine may set the lube oil alarm off.	
2. Immediately secure the engine and inform the engineer and other crew members of the casualty.	_____
3. The engineer should proceed to the engine room and look through the window in the engine room door to ensure that it is safe to enter.	_____
4. If it is safe to enter, enter the engine room and check the bilge for oil.	_____
5. Check the engine lube oil for quantity and quality and for obvious leaks.	_____
6. Check the cooling system recovery bottle for contamination.	_____
7. If the cause is not correctable, do not restart the engine.	_____
<b>NOTE</b>  In an emergency, oil pressure can be run as low as 5 PSI at idle and 32 PSI at full load.	

**Instructor****Date****Comments**

**TASK ENG-02-19-47MLB Main Engine High Water Temperature****References**




- a. *47' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.25 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**


This task will be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. If the EDM alarm sounds and flashes a Code 44 (Coolant Temperature High) take the following actions:	_____
a. The coxswain should reduce the engine RPMs to <i>clutch ahead</i> and determine which engine has overheated and inform the crew.	_____
b. The engineer should proceed to the survivor's compartment, look through the window in the engine room watertight door and report what temperature has been reached.	_____
c. If steam is present or if the temperature is 220 °F or above, secure the engine(s).	_____
<b>WARNING</b>  If steam is flowing from the expansion tank vent, the engine(s) should be secured and cooled naturally. If the pressure is released when extremely hot by removing the expansion tank cover, the coolant will either flash to steam or boil with a serious potential for injury.	
d. If no steam is present, enter the engine room and check the bilge and check the brass pipes on the inboard side of each engine for coolness for an initial determination of which engine water system (raw water or jacket water) the casualty is in.	
e. If pipe is cool, the raw water system for that engine is probably operating normally; the engineer should make initial casualty control checks for the jacket water system.	_____
f. If pipe is hot, the engineer should make casualty control checks for the raw water system.	_____
2. Take the following action to check the function of the raw water system:	_____
a. Verify that the sea suction valve(s) are open. Ensure that the de-icing valves located just under the engine room step are closed.	_____
b. Check the duplex strainers to ensure that the handle is pointing to one strainer or the other. Shift and clean the strainers as necessary.	_____
c. If the strainers are clean, check the raw water pump cover lightly with the back of the hand for coolness. If the impeller is burned up, the cover will be very hot. If the cover is hot, secure the engine and replace the impeller.	_____
<b>NOTE</b>  If one engine has overheated due to a clogged sea strainer, the other engine may be close to overheating for the same reason.	
3. Take the following actions to check the function of the jacket water system:	_____
a. Check the jacket water level. Check the engine and bilge for leakage. Replace fluid if necessary.	_____
<b>NOTE</b>  Anti-freeze is poisonous. Do not inhale the fumes.	
b. Inspect the jacket water pump for normal function.	_____
c. Check lube oil for proper quantity and quality.	_____
d. If jacket water leaks are found, if the pump is inoperative or if temperature continues to climb, secure the engine.	_____



Performance Criteria		Completed (Initials)
<b>NOTE</b> 	Oil alarms and sensors are directly related to engine temperature. An overheating engine will often set off lube oil alarms.	
<b>CAUTION !</b>	If, after all efforts have been made at casualty control, including reducing the engine load, the engine temperatures do not decrease, secure the engine. The manufacturer recommends shutdown of the engine if the temperature exceeds 220 °F.	

**Instructor** \_\_\_\_\_ **Date** \_\_\_\_\_

**Comments** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**TASK ENG-02-20-47MLB Excessive Shaft Seal Leakage**

**References**



- a. *47' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.25 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria		Completed (Initials)
1.	The engineer should inform the crew of the casualty.	_____
2.	The coxswain should reduce the RPMs to <i>neutral</i> and secure the affected engine.	_____
<b>WARNING</b> 	De-energize the START SAFETY switch in the engine room to prevent inadvertent starting of the engine while working around the cardan shaft.	
3.	The engineer should realign the seal assembly and check to see if the seal clamp has backed off.	_____
4.	If the clamp ring remains tight, restart the engine after realignment and roll the shaft. If excessive water continues to leak from the seal, secure the engine.	_____
5.	The engineer should then loosen the seal clamp ring and reposition it in a position that properly compresses the seal bellows.	_____
6.	Restart the engine and roll the shaft. If the seal continues to leak excessively, secure the engine and return to the station.	_____
<b>WARNING</b> 	The shaft must not be allowed to turn with the emergency seal clamp ring engaged. The emergency seal clamp ring should only be used if the boat is not going to be moved. If the shaft turns with the emergency seal clamp ring engaged, the seal will be torn causing uncontrollable leakage. It is best to allow the shaft to troll (spin freely) if this casualty is discovered while underway. Ensure the bilge pumps are functioning properly.	

**Instructor**

**Date**

**Comments**

**TASK ENG-02-21-47MLB      Flooding****References**




- a. *47' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.25 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. The engineer will check the control panel to identify the space where flooding is indicated. Notify the coxswain and push RESET to silence alarm.	_____
<b>NOTE</b>  A sounding of the horn will indicate water in the bilge space.	_____
2. The engineer and a crew member will proceed to the flooded space indicated by the control panel, look through the window in the watertight door and report status to coxswain. If directed, enter space to investigate.	_____
3. The engineer shall report to the coxswain the extent, cause and corrective actions necessary to control or stop the flooding.	_____
<b>NOTE</b>  The survivor's compartment bilge space is divided by the fuel tank into port and starboard gear spaces, and must be checked separately for flooding.	_____
4. The crew will prepare to apply basic casualty control procedures, making ready the damage control kit and the portable dewatering pump as required.	_____
5. The crew shall check the material condition of each compartment. Report results to the coxswain.	_____
6. After damage has been assessed, determine whether it is safe to proceed with the mission or return to the unit.	_____
<b>CAUTION !</b>  The bilge flooding alarm system is designed to notify the crew of an onboard emergency underway as well as dockside. This system should be confirmed operational prior to and upon return from any missions or sorties.	_____

**Instructor****Date****Comments**

**TASK ENG-02-22-47MLB Draw the 47' MLB Systems**

**References**

- a. *47' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.25 (series)
- b. 47' Motor Lifeboat Technical Publication Number 3355

**Conditions**

This task will be performed pierside. Trainee must accomplish task without prompting or use of a reference.

**Standards**

The trainee must correctly trace out and draw the following systems:

Performance Criteria	Completed (Initials)
1. Trace out and draw the following systems: a. Fuel oil system. b. Raw water cooling system. c. Hydraulic steering system. d. Fixed CO <sub>2</sub> fire fighting system. e. Installed dewatering system. f. Reduction gear lube oil system. g. DDEC engine and reduction gear control system. h. 12-volt and 24-volt DC electrical charging and supply system. i. 120-volt AC electrical system.	_____

**Instructor**

**Date**

**Comments**



## Section C. 44' Motor Lifeboat (MLB)

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### Introduction

The following are objectives of Division Three:

- **Demonstrate** knowledge of the casualties and discrepancies that would prevent a 44' MLB from getting underway.
  - **Demonstrate** the ability to perform Engineering Casualty Control on a 44' MLB.
- 

### In this section

This section contains the following tasks:

Task Number	Task	See Page
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ENG-03-03-44MLB	Set Watertight Integrity Aboard the 44' MLB	2-62
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**TASK ENG-03-01-44MLB      Locate Components and Accessories of the 44' MLB Propulsion System****References**

- a. *44' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.3 (series)

**Conditions**

The task will be performed pierside, while normal unit training and lecture programs pertaining to boat operations are being conducted. Where practicable, the pierside instructions should be followed by related underway exercises.

**Standards**

Aboard a 44' MLB, without reference material, the trainee must locate components and accessories of the propulsion system following the steps listed below:

Performance Criteria	Completed (Initials)
1. Locate the main engines and state the following: <ol style="list-style-type: none"> <li>Make and model.</li> <li>Horsepower of each engine.</li> <li>Cruising and maximum engine RPMs.</li> <li>Rotation of each engine.</li> <li>Oil capacity of each engine.</li> <li>Describe the Airsep system.</li> </ol>	_____
2. Describe the fuel oil system: <ol style="list-style-type: none"> <li>State the location of the fuel tank.</li> <li>State the capacity and type of fuel used.</li> <li>Locate the fill tube, sounding rod and fuel gauge.</li> <li>Locate the fuel tank vent.</li> <li>Locate the emergency cutoffs.</li> <li>Locate the primary filters, secondary filters, priming pump and stripping pump.</li> <li>Locate and state the size and purpose of the restricted orifice.</li> </ol>	_____
3. Describe the engine cooling system: <ol style="list-style-type: none"> <li>State the type of system used.</li> <li>Locate the sea suction, sea strainers and air vent.</li> <li>State how the engines are cooled.</li> <li>State how the marine gear is cooled.</li> <li>State how the exhaust gases are cooled.</li> <li>State how the heat exchanger element is protected from corrosion.</li> <li>Locate and state the purpose of the raw water pump.</li> <li>State the jacket water capacity of the engines.</li> <li>Locate the jacket water pump, thermostats and hot start.</li> </ol>	_____
4. State the following parameters for <i>idle</i> and <i>cruising</i> and at what temperature or pressure the alarms are activated <ol style="list-style-type: none"> <li>Engine jacket water temperature.</li> <li>Engine oil pressure.</li> <li>Reduction gear pressure.</li> </ol>	_____
5. Locate and state the purpose of the following engine stop systems: <ol style="list-style-type: none"> <li>Engine STOP buttons.</li> <li>Emergency fuel stops.</li> <li>Emergency engine stops.</li> </ol>	_____



Performance Criteria	Completed (Initials)
6. Locate the marine gears and state the following: <ol style="list-style-type: none"> <li>Make, model and configuration of gear box.</li> <li>Gear ratio in <i>forward</i> and <i>reverse</i>.</li> <li>Oil dipstick and where oil is added.</li> <li>Oil capacity of the gears and what type of oil is used.</li> </ol>	_____
7. Describe the boat shafts and propellers, stating the following: <ol style="list-style-type: none"> <li>Diameter of shaft.</li> <li>Purpose of the shaft seal.</li> <li>Propeller diameter and pitch.</li> <li>Number of blades.</li> <li>Direction of rotation in <i>forward</i> and <i>reverse</i>.</li> </ol>	_____
8. Describe and state the purpose of the compressed air system. <ol style="list-style-type: none"> <li>Locate the air compressor and state the PSI.</li> <li>Locate the air tank and state capacity.</li> <li>Pressure gauge and bleed valve.</li> <li>Cut in/out pressure.</li> <li>Relief valve setting.</li> </ol>	_____
9. Describe the fixed fire fighting and installed eductor systems: <ol style="list-style-type: none"> <li>Locate the fire pump.</li> <li>State the pressure range of the fire pump.</li> <li>State the output of the fire pump in gallons per minute.</li> <li>State the maximum engine RPMs with the fire pump engaged.</li> <li>Locate and state the purpose of the installed eductor and isolation valves.</li> </ol>	_____
10. Describe the hydraulic steering system: <ol style="list-style-type: none"> <li>Locate the steering pump.</li> <li>Locate and state the capacity of the oil reservoir.</li> <li>State the type of oil used.</li> <li>Locate and state the purpose of the flow divider.</li> <li>Locate and state the purpose of the relief valve.</li> </ol>	_____
11. Locate and state the purpose of the fixed Halon fire extinguishing system. <ol style="list-style-type: none"> <li>Halon cylinder and state the PSI.</li> <li>Engine shutdown cylinders.</li> <li>Thermal sensors and at what temperature the alarm will sound.</li> <li>State what will happen when the Halon cylinder is discharged.</li> </ol>	_____

**Instructor** \_\_\_\_\_ **Date** \_\_\_\_\_

**Comments** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**TASK ENG-03-02-44MLB      Locate Components and Accessories of the 44' MLB Electrical System**

**References**

a. *44' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.3 (series)

**Conditions**

The task will be performed pierside, while normal unit training and lecture programs pertaining to boat operations are being conducted. Where practicable, the pierside instructions should be followed by related underway exercises.

**Standards**

Aboard a 44' MLB, without reference material, the trainee must locate components and accessories of the electrical system following the steps listed below:

Performance Criteria	Completed (Initials)
1. Locate the following DC power equipment: <ul style="list-style-type: none"> <li>a. Batteries and state how the batteries are connected.</li> <li>b. Alternators.</li> <li>c. DC and AC power panels and their voltages.</li> </ul>	<hr/>

**Instructor**

**Date**

**Comments**

**TASK ENG-03-03-44MLB     Set Watertight Integrity Aboard the 44' MLB****References**

- a. *44' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.3 (series)

**Conditions**

The task will be performed pierside, while normal unit training and lecture programs pertaining to small boat operations are being conducted. Where practicable, the pierside instructions should be followed by related underway exercises.

**Standards**

The trainee, without error, must state the number and location of all watertight compartments, hatches and doors aboard a 44' MLB. The trainee must secure all hatches and doors for watertightness.

Performance Criteria	Completed (Initials)
1. State the purpose of watertight integrity.	_____
2. State the number and location of the following watertight closure devices and compartments aboard a MLB: a. Watertight hatches. b. Quick-acting watertight doors. c. Watertight compartments.	_____
3. Set watertight integrity.	_____

**Instructor****Date****Comments**

**TASK ENG-03-04-44MLB List the Disabling Casualties and Restrictive Discrepancies that Prevent the 44' MLB from Getting Underway**

**References**

- a. *44' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.3 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed pierside, while normal unit training and lecture programs pertaining to small boat operations are being conducted. Where practicable, the pierside instructions should be followed by related underway exercises.

**Standards**

With reference material and without error, the trainee must state the equipment that, should a casualty or discrepancy occur, will prevent an MLB from getting underway for an operational mission. The trainee must know the difference between disabling casualties and restrictive discrepancies. The trainee must know what steps must be followed when a casualty or discrepancy is found.

Performance Criteria	Completed (Initials)
1. State the equipment that is listed in <i>Appendix F (Disabling Casualties)</i> , <i>44' MLB Operator's Handbook</i> .	_____
2. State the equipment that is listed in <i>Appendix G (Restrictive Discrepancies)</i> , <i>44' MLB Operator's Handbook</i> .	_____

**Instructor**

**Date**

**Comments**

**TASK ENG-03-05-44MLB      Conduct a Pre-Start Check-Off on the 44' MLB****References**a. *44' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.3 (series)**Conditions**

This task will be performed pierside when making preparations for getting underway, or while normal unit training and lecture programs pertaining to boat operations are being conducted. The trainee will perform the duties of the engineer under the direct supervision of an instructor.

**Standards**

The trainee must properly complete all steps below in order to successfully complete this task:

Performance Criteria	Completed (Initials)
1. Energize the main breaker and general lighting on the circuit breaker panel located on the mess deck.	_____
2. Check for fuel or excessive water in the bilges.	_____
3. Check all fluids levels.	_____
4. Open sea suction valves, and check sea strainers for cleanliness.	_____
5. Check to see that fuel supply and return valves are <i>open</i> . Sound the fuel tank using the sounding stick.	_____
6. Inspect linkages and check all belts for proper tension. You should be able to depress the belt only about $\frac{7}{16}$ inch per foot of span.	_____
7. Secure shore-tie power at the boat AC power panel and at the dockside; then disconnect the shore power cable.	_____
8. Ensure all AC electrical power switches are in the <i>off</i> position.	_____

**Instructor****Date****Comments**

**TASK ENG-03-06-44MLB     Start the 44' MLB**

**References**

a. *44' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.3 (series)

**Conditions**

This task will be performed pierside when making preparations for getting underway, or while normal unit training and lecture programs pertaining to boat operations are being conducted. The trainee will perform the duties of the engineer under the direct supervision of an instructor. This task is to be performed after a pre-start check has been completed.

**Standards**

The trainee must properly complete all steps below in order to successfully complete this task:

Performance Criteria	Completed (Initials)
1. Ensure throttles are in the <i>neutral</i> position, engine stops, and <i>neutral</i> throttles are pushed in.	_____
2. Energize starting and alarm breakers on the 24-volt DC power panel.	_____
3. Depress starter button and hold until engine starts. If the engine does not start within 15 seconds, allow it to stand for 30 seconds, then repeat the procedure. If it still does not start after three tries, refer to the maintenance manual.	_____
4. Repeat step 3 for other engine.	_____
5. When the engine starts, check for proper oil pressures and water temperatures.	_____
6. Check raw water system to ensure adequate circulation.	_____
7. Inspect the engines for external water or oil leaks, or other abnormal conditions.	_____

**Instructor**

**Date**

**Comments**

**TASK ENG-03-07-44MLB    Secure the 44' MLB After Operations****References**

- a. *44' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.3 (series)

**Conditions**

This task will be performed pierside when making preparations for getting underway, or while normal unit training and lecture programs pertaining to small boat operations are being conducted. The trainee will perform the duties of the engineer under the direct supervision of an instructor.

**Standards**

The following steps should be completed to return the boat to a ready status:

Performance Criteria	Completed (Initials)
1. Secure all switches on the circuit breaker panel for electronics equipment with the exception of main, general light and start, and alarm breakers.	_____
2. Shutdown the engines by pulling up on the engine stops located on the coxswain's console.	_____
3. Secure start and alarm breakers.	_____
4. Close seachest valves.	_____
5. Take and record fuel sounding, top-off tank if not already done.	_____
6. Check and replenish as necessary all fluid levels.	_____
7. Pump bilges using shoreside equipment, and wipe engines and bilges clean.	_____
8. Stow all gear. Rinse fire and dewatering equipment, if used, with freshwater, and dry before stowing.	_____
9. Visually inspect all hoses, wiring, belts and other items subject to wear.	_____
10. Reconnect shore-tie, and then switch on breakers at the AC power panel, located in the engine room, for battery charger, hot starts, and compartment heaters.	_____
11. Inspect all watertight compartments and dog all hatches and doors.	_____
12. Secure the main panel breaker on the DC panel.	_____
13. Replace the dewatering pump kit, if used. Wash it out with freshwater, refill fuel tank, and ensure it is completely dry before repacking. Maintenance, inspection and packing procedures are outlined in <i>CG Rescue and Survival Systems Manual</i> , COMDTINST M10470.10 (series).	_____

**Instructor****Date****Comments**

**TASK ENG-03-08-44MLB Capsizing**

**References**



- a. *44' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.3 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Once righted, assess the situation quickly. You will still be in the surf and must take the next wave correctly or the boat may roll again.	_____
2. Check the crew to ensure no one was lost overboard or injured.	_____
<b>WARNING</b>  Do not hook up the shore-tie. The distribution panel in the engine room may be soaked with oil and water. Particular attention must be given to cleaning the AC power panel, alternators, battery charger, engine alarm panel, batteries, and starter motors.	
3. If the engines are still working, move to safe water.	_____
4. Once in safe water, the engineer should go below to check for damage.	_____
5. Secure the electrical circuit breakers with the exception of the VHF-FM radio.	_____
6. The engine room may be coated with water and oil presenting a fire hazard. Be sure to look through the port light in the engine room hatch for signs of a fire before entering. If there is no fire, the engineer should dewater the engine room with the installed eductor system.	_____
7. Once this is accomplished, check the oil in both main engines (engines must be secured to ensure an accurate reading).	_____
8. Upon returning to the station, all electronic and electrical equipment must be removed and cleaned.	_____
<b>NOTE</b>  All wiring must be cleaned, dried, and a ground and insulation leakage test accomplished. The engine room must be washed down and the sound dampening material must be inspected. During a rollover, this material becomes oil soaked and a fire hazard. All fluids and associated filters, such as reduction gear, hydraulic system, and main engine oil should be replaced.	

**Instructor**

**Date**

**Comments**

**TASK ENG-03-09-44MLB Steering Casualty****References**



- a. *44' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.3 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria		Completed (Initials)
<b>CAUTION !</b>	If a loss of hydraulic steering fluid occurs, failure to secure the starboard engine may result in damage to the engine or steering pump.	
1.	Remove one of the rudder caps on the main stern deck.	_____
2.	Remove the tiller from its stowage area (bulkhead 21), and drop the socket end onto either rudder stock.	_____
3.	Remove the ram from the twin rudder, and lay it on the deck (tie off ram to prevent damage).	_____
4.	The upper portion of the rudder stock is machined square to receive the emergency tiller.	_____
<b>WARNING</b> 	If a steering failure occurs while the MLB has a tow, do not rig the emergency tiller. Crew members working aft of bulkhead 17 during towing operations are placed in grave danger. Steer with engines and/or call for assistance if emergency repairs cannot be made.	
<b>NOTE</b> 	If the steering system fails while underway with no tow and you decide to rig the tiller, have the crew member use a safety belt attached to the aft rail.	

**Instructor****Date****Comments**

**TASK ENG-03-10-44MLB Bilge Flooding**

**References**



- a. *44' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.3 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Ensure valves to fire station riser and eductor suction line are closed.	_____
2. Open seachest valve to fire pump.	_____
3. Open eductor inlet and overboard discharge valves.	_____
4. Engage fire pump.	_____
5. Increase port engine speed to 1325 RPM and ensure positive overboard discharge.	_____
6. Slowly open valve in eductor suction line, and pump bilges as necessary.	_____
7. When pumping is complete, reverse the procedure.	_____
<b>WARNING</b>  <div>Operation of the bilge eductor system requires a crew member in the engine room at all times since the engine room can be flooded using this system.</div>	
<b>NOTE</b>  <div>After the MLB has experienced a grounding, heavy seas, and/or surf, check all bilges. If any amount of water exists, investigate its source. Take corrective action as necessary.</div>	

**Instructor**

**Date**

**Comments**

**TASK ENG-03-11-44MLB     Engine Room Fire****References**


- a. *44' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.3 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Secure engines.	_____
2. Clear engine room of personnel.	_____
3. Close engine room door.	_____
4. Secure electrical power (except VHF-FM).	_____
5. Pull emergency fuel cutoffs.	_____
6. Pull pin and discharge Halon.	_____
7. Keep engine room door closed for 15 minutes.	_____
8. Ventilate compartment for 15 minutes.	_____
<b>WARNING</b>  <div style="border: 1px solid black; padding: 5px; display: inline-block;">           Because of the many different types of materials in the engine room, the presence of harmful vapors and toxic gases are a distinct possibility. Use EXTREME CAUTION and COMMON SENSE before entering.         </div>	

**Instructor****Date****Comments**

**TASK ENG-03-12-44MLB Main Engine High Water Temperature**

**References**


- a. *44' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.3 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Reduce engine RPMs.	_____
2. Investigate if steam is coming from the overflow relief. Secure engine.	_____
3. If no steam is present, feel salt water pipes on affected engine. If pipes are warm, take the follow actions: <ol style="list-style-type: none"> <li>a. Check sea suction valves.</li> <li>b. Check sea strainers.</li> <li>c. Check raw water pump.</li> </ol>	_____
4. If no steam is present and salt water pipes are cool, take the following actions: <ol style="list-style-type: none"> <li>a. Check freshwater pump belts.</li> <li>b. Check for obvious water leaks.</li> </ol>	_____
<b>WARNING</b>  Removing expansion tank cap while engine is hot may cause coolant to flash to steam causing serious burns.	

**Instructor**

**Date**

**Comments**

**TASK ENG-03-13-44MLB      Loss of Lubrication Oil Pressure****References**


- a. *44' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.3 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Reduce engine RPMs and identify which engine has a loss of lube oil pressure. Shut down the affected engine immediately unless circumstances warrant continued operation due to safety of the crew.	_____
<b>WARNING</b>  If engine oil pressure gauge reads zero, SECURE engine immediately.	
2. Check for problems, including the following: <ol style="list-style-type: none"> <li>a. Oil level.</li> <li>b. Obvious oil leaks.</li> <li>c. Expansion tank contamination.</li> <li>d. Blown oil cooler.</li> <li>e. Faulty sensor.</li> <li>f. Fuel oil dilution.</li> </ol>	_____

**Instructor****Date****Comments**

**TASK ENG-03-14-44MLB      Loss of Control of Engine RPMs**

**References**


- a. *44' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.3 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Bring both throttles to <i>idle, clutch ahead</i> .	_____
2. Pull engine stop for affected engine.	_____
3. Turn boat in the direction of the affected engine to put load on engine.	_____
4. Pull emergency fuel cutoff.	_____
5. Trip the emergency air shutdown on front portion of blower.	_____
<b>NOTE</b>  Do not use Halon fire fighting system to secure engines.	

**Instructor**

**Date**

**Comments**

**TASK ENG-03-15-44MLB****Reduction Gear Failure****References**

- a. *44' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.3 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Reduce engine RPMs to <i>neutral</i> .	_____
2. Secure affected engine.	_____
3. Look through engine room port to ensure it is safe to enter.	_____
4. If safe to enter, check bilges for oil.	_____
5. Check the reduction gear lube oil level.	_____
6. Check reduction gear for obvious leaks.	_____
7. Check expansion tank for oil contamination.	_____
8. If full, restart engine and check reduction gear pressure when in <i>forward</i> and <i>reverse</i> (120-160 PSI).	_____
9. If reduction gear fails to operate, secure engine. If there is no reduction gear oil pressure, lock shaft.	_____

**Instructor****Date****Comments**

**TASK ENG-03-16-44MLB      Loss of Fuel Oil Pressure**

**References**

- a. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Ensure engine stops are pushed in.	_____
2. Check emergency fuel oil shutoffs.	_____
3. Check governor linkage.	_____
4. Check bilges for fuel.	_____
5. Check primary fuel filters.	_____
6. Check entire fuel oil system for leaks.	_____

**Instructor**

**Date**

**Comments**

**TASK ENG-03-17-44MLB     Draw the 44' MLB Systems****References**

a. *44' Motor Lifeboat Operator's Handbook*, COMDTINST M16114.3 (series)

**Conditions**

This task will be performed pierside. Trainee must accomplish task without prompting or use of a reference.

**Standards**

The trainee must correctly trace out the following systems:

Performance Criteria	Completed (Initials)
1. Trace out and draw the following systems: <ul style="list-style-type: none"> <li>a. Fuel oil system.</li> <li>b. Raw water cooling system.</li> <li>c. Freshwater cooling system.</li> <li>d. Hydraulic steering system.</li> <li>e. Fixed Halon fire fighting system.</li> <li>f. Installed fire fighting/dewatering system.</li> <li>g. Reduction gear lube oil system.</li> </ul>	_____

**Instructor****Date****Comments**

## Section D. 30' Special Purpose Craft (SPC) (Surf)

### Introduction

The following are objectives of Division Four:

- **Demonstrate** knowledge of the casualties and discrepancies that would prevent a 30' SPC from getting underway.
- **Demonstrate** the ability to perform Engineering Casualty Control on a 30' SPC.

### In this section

This section contains the following tasks:

Task Number	Task	See Page
ENG-04-01-30SPC	Locate Components and Accessories of the SPC Propulsion System	2-79
ENG-04-02-30SPC	Conduct a Pre-Start Check-Off on the SPC	2-81
ENG-04-03-30SPC	Start the SPC	2-82
ENG-04-04-30SPC	Secure the SPC After Operations	2-83
ENG-04-05-30SPC	Engine will not Turn Over when the Starter Button is Pushed	2-84
ENG-04-06-30SPC	Engine Running Uneven or Stalls	2-85
ENG-04-07-30SPC	Loss of Steering	2-86
ENG-04-08-30SPC	Reduction Gear Failure	2-87
ENG-04-09-30SPC	Loss of Main Engine Lube Oil Pressure	2-88
ENG-04-10-30SPC	Main Engine High Water Temperature	2-89
ENG-04-11-30SPC	Overheating Shaft Packing Gland	2-90
ENG-04-12-30SPC	Draw the SPC Systems	2-91



**TASK ENG-04-01-30SPC      Locate Components and Accessories of the SPC Propulsion System****References**

- a. Applicable Technical Manuals

**Conditions**

This task will be performed when the boat is in the cradle or moored. The task will be performed during normal unit training and lecture programs pertaining to boat operations. Where practicable, the instructions should be followed by related underway exercises.

**Standards**

The trainee, while aboard a SPC without reference material, must locate components and accessories of the propulsion system as listed below:

Performance Criteria	Completed (Initials)
1. Locate the main engine and state the following: <ul style="list-style-type: none"> <li>a. Make and model.</li> <li>b. Horsepower of the engine.</li> <li>c. Oil capacity and type of oil used in the main engines.</li> </ul>	_____
2. Locate the engine stop handle and state why it must remain in the <i>up</i> position when the engine is not running.	_____
3. Locate the following gauges for each engine and state their proper readings at <i>idle</i> and <i>cruising</i> speeds. <ul style="list-style-type: none"> <li>a. Coolant temperature.</li> <li>b. Lube oil pressure.</li> <li>c. Marine gear oil pressure.</li> </ul>	_____
4. Describe the fuel oil system: <ul style="list-style-type: none"> <li>a. State the location and capacity of the fuel tank and why the tank is not filled to 100 percent capacity.</li> <li>b. State the usable capacity of the tank.</li> <li>c. State the type of fuel used.</li> <li>d. Locate the fill pipe and sounding rod.</li> <li>e. Locate the fuel filters and priming pump.</li> <li>f. Locate the fuel return check valve.</li> </ul>	_____
5. Describe the engine cooling system: <ul style="list-style-type: none"> <li>a. State the type of system used.</li> <li>b. Locate the seachest.</li> <li>c. Locate the sea suction valve, and simplex strainer.</li> <li>d. State the purpose of the electro-magnetic clutch raw water pump.</li> <li>e. State how the heat exchanger element is protected from corrosion.</li> <li>f. State the jacket water capacity of the engine.</li> <li>g. Locate the jacket water pump, oil cooler and thermostat.</li> <li>h. State how the engine and marine gear are cooled.</li> </ul>	_____
6. Describe the engine alarm system: <ul style="list-style-type: none"> <li>a. State the purpose of the engine alarm system and at what temperature or pressure the alarm is activated.</li> <li>b. State the purpose of the ALARM CUTOFF switch.</li> </ul>	_____
7. Locate the marine gear and state the following: <ul style="list-style-type: none"> <li>a. Make and model.</li> <li>b. Oil capacity and type of oil used in the marine gear.</li> <li>c. Gear ratio in <i>forward</i> and <i>reverse</i>.</li> </ul>	_____



Performance Criteria	Completed (Initials)
8. Describe the boat's propeller and state the following: a. Diameter and pitch. b. Number of blades.	_____
9. Locate the main engine jacket water heaters and state the following: a. The purpose of the heater. b. Operating temperature range of the system. c. The location of the switch for the main engine jacket water heater.	_____
10. Describe the boat's steering system: a. Helm pump. b. Cylinder. c. Tiller. d. State how to fill and purge system. e. State type of oil used. f. State capacity of system. g. State operating pressure.	_____
11. Locate and describe the fixed bilge dewatering system.	_____

**Instructor** \_\_\_\_\_ **Date** \_\_\_\_\_

**Comments** \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**TASK ENG-04-02-30SPC      Conduct a Pre-Start Check-Off on the SPC****References**

- a. Applicable Technical Manuals

**Conditions**

This task will be performed when the boat is in the cradle or moored. The task will be performed during normal unit training and lecture programs pertaining to boat operations. Where practicable, the instructions should be followed by related underway exercises.

**Standards**

The trainee must properly complete all steps below in order to successfully complete this task:

Performance Criteria	Completed (Initials)
1. Sound fuel tank with sounding rod, fuel should be at or near 95 percent.	_____
2. Energize the main switch.	_____
3. Check engine compartment and bilge for unsecured loose gear.	_____
4. Check bilge for water, fuel, and oil.	_____
5. Check the marine gear and engine oil levels.	_____
6. Check engine coolant level.	_____
7. Check steering fluid level.	_____
8. Visually check sea strainer basket through transparent cylinders for debris. Clean if necessary.	_____
9. Open sea suction valve.	_____
10. Check for proper valve alignment of fuel system.	_____
11. Check engine controls for free movement.	_____
12. Check belts for proper tension (no greater than $\frac{7}{16}$ inch per foot of span).	_____
13. Secure battery charger and jacket water heater.	_____
<b>CAUTION !</b> Never start or run the engines with the battery charger energized. Damage to the alternator may occur.	

**Instructor****Date****Comments**

**TASK ENG-04-03-30SPC****Start the SPC****References**


- a. Applicable Technical Manuals

**Conditions**

This task will be performed when the boat is in the cradle or moored. The task will be performed during normal unit training and lecture programs pertaining to boat operations. Where practicable, the instructions should be followed by related underway exercises.

**Standards**

The trainee must properly complete all steps below in order to successfully complete this task:

Performance Criteria	Completed (Initials)
1. Energize the main switch. All other switches must be <i>off</i> .	_____
2. Ensure engine alarm toggle switch is <i>on</i> .	_____
3. Ensure throttle is in the <i>neutral</i> position.	_____
4. Push fuel stop “T” handles down.	_____
5. Ensure the raw water pump switch is <i>on</i> .	_____
6. Press starter button.	_____
7. Engage raw water pump when boat contacts the water.	_____
8. If engine will not start in 5-10 seconds, let the starter cool for 30 seconds and try again.	_____
9. Check oil pressure immediately after engine starts.	_____
10. Check marine gear lube oil pressure.	_____
11. Check alternator output.	_____
12. Check raw water overboard discharge.	_____
13. Energize and inspect all electrical equipment.	_____
14. Test lubricating oil for fuel oil dilution.	_____
15. Check engine for fuel oil, jacket water, exhaust, raw water, and oil leaks, or other abnormal conditions.	_____
16. Check propeller shaft packing gland for leakage and temperature.	_____
<b>NOTE</b>  Diesel engines are best warmed up under load. When practical, get underway as soon as check-off procedures are completed.	
17. Monitor gauges on console for correct engine operating parameters.	_____

**Instructor****Date****Comments**

**TASK ENG-04-04-30SPC      Secure the SPC After Operations**

**References**

a.    Applicable Technical Manuals

**Conditions**

This task will be performed when the boat is in the cradle or moored. The task will be performed during normal unit training and lecture programs pertaining to boat operations. Where practicable, the instructions should be followed by related underway exercises.

**Standards**

The trainee must properly complete all steps below in order to successfully complete this task:

Performance Criteria	Completed (Initials)
1.    Allow the engines to idle 4-5 minutes; especially if recently run at high RPMs.	_____
2.    Secure all electrical gear with the exception of the main switch.	_____
3.    Shut down the engine by pulling up on the engine stop “T” handle located on the console. Engine stop must remain in the <i>up</i> position at all times while the engine is secured. Allow alarm to activate, then secure alarm.	_____
4.    Secure the sea suction valves.	_____
5.    Connect 110-volt electrical cable and ensure battery charger and hot start is energized.	_____
6.    Remove any water, fuel or oil from the bilge.	_____
7.    Sound the fuel tanks and fill to 95 percent.	_____
8.    Stow all gear; ensure boat is ready for sea.	_____

**Instructor**

**Date**

**Comments**

**TASK ENG-04-05-30SPC****Engine will not Turn Over when the Starter Button is Pushed****References**

- 
- a. Applicable Technical Manuals
- 

**Conditions**

This task will be performed when the boat is in the cradle or underway during daylight hours. The task will be performed during normal unit training and lecture programs pertaining to boat operations. Where practicable, the instructions should be followed by related underway exercises. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

---

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Ensure main power switch is energized.	_____
2. Check battery voltage.	_____
3. Check battery and starter cables for broken, loose, or corroded connections.	_____
4. Ensure throttle is in <i>neutral</i> .	_____
5. If actions above do not solve casualty, call unit for assistance.	_____

**Instructor****Date****Comments**

**TASK ENG-04-06-30SPC      Engine Running Uneven or Stalls**

**References**      a.    Applicable Technical Manuals

**Conditions**      This task will be performed when the boat is in the cradle or underway during daylight hours. The task will be performed during normal unit training and lecture programs pertaining to boat operations. Where practicable, the instructions should be followed by related underway exercises. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**      The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1.    Ensure fuel stop “T handle” is in the <i>down/run</i> position.	_____
2.    Ensure fuel supply valve is <i>open</i> .	_____
3.    Ensure fuel stop linkage is intact at fuel pump.	_____
4.    Check level of fuel tank.	_____
5.    Check fuel supply lines for air leaks, repair and bleed if necessary.	_____
6.    Check intake air system for restrictions.	_____
7.    Check fuel filter for contamination.	_____
8.    If actions above do not solve casualty, call unit for assistance.	_____

**Instructor** \_\_\_\_\_ **Date** \_\_\_\_\_

**Comments** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**TASK ENG-04-07-30SPC****Loss of Steering****References**

- a. Applicable Technical Manuals

**Conditions**

This task will be performed when the boat is underway during daylight hours. The task will be performed during normal unit training and lecture programs pertaining to boat operations. Where practicable, the instructions should be followed by related underway exercises. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Bring throttle to <i>neutral</i> or minimum steerageway clutch position if in a running sea. Try to put the seas on the bow. Steer with the engines.	_____
2. Remove access cover for the rudderpost.	_____
3. Remove the tiller from its stowage area, and drop the socket end onto rudderstock.	_____
4. The upper portion of the rudderstock is machined square to receive the emergency tiller.	_____
5. Remove pin from rod end ball joint.	_____
6. Check system from stern to helm for cause of casualty (i.e. low fluid).	_____
7. Gain control of rudder using the tiller.	_____
8. Test rudder for complete range.	_____

**Instructor****Date****Comments**

**TASK ENG-04-08-30SPC**

**Reduction Gear Failure**

**References**


- a. Applicable Technical Manuals

**Conditions**

This task will be performed when the boat is underway during daylight hours. The task will be performed during normal unit training and lecture programs pertaining to boat operations. Where practicable, the instructions should be followed by related underway exercises. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
<p>1. Bring engine control to the <i>neutral</i> position. Check marine gear lube oil pressure. If there is no pressure, secure engine immediately.</p> <p>a. If pressure is the normal range for idle; place control in <i>clutch ahead</i>. If pressure rises to the clutched in range, but doesn't engage, bring control back to <i>neutral</i> and secure the engine. Malfunction is internal.</p> <p>b. If pressure does not rise to the normal clutched in range, check linkage in the control head and at the selector valve.</p>	<p>_____</p>
<p><b>NOTE</b>  Even though the controls and linkage may be actuating the selector valve, mis-adjustment of the linkage may be preventing the gear from engaging. Perform the steps listed below to eliminate faulty linkage or linkage adjustment as the cause of the casualty.</p>	<p>_____</p>
<p>2. Request permission from the coxswain to manually engage the marine gear.</p> <p>a. Disconnect linkage at selector valve and shift lever into <i>forward</i> position. If the marine gear will not engage using this method, secure engine and notify station of situation.</p> <p>b. If the marine gear engages, the problem is in the linkage adjustment or cable clamps in the control head or at the marine gear. Adjust/repair as necessary to obtain positive engagement in <i>forward</i> and <i>reverse</i>.</p>	<p>_____</p>

**Instructor**

**Date**

**Comments**

**TASK ENG-04-09-30SPC      Loss of Main Engine Lube Oil Pressure****References**

- 
- a. Applicable Technical Manuals
- 

**Conditions**

This task will be performed when the boat is underway during daylight hours. The task will be performed during normal unit training and lecture programs pertaining to boat operations. Where practicable, the instructions should be followed by related underway exercises. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

---

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Secure affected engine.	_____
2. Ensure fire extinguisher is on scene.	_____
3. Open engine compartment hatch.	_____
4. Check for lube oil in bilge area.	_____
5. Check lube oil for quantity and quality.	_____
6. Return to unit if cause cannot be determined or repaired.	_____

**Instructor****Date****Comments**

**TASK ENG-04-10-30SPC      Main Engine High Water Temperature****References**


- a. Applicable Technical Manuals

**Conditions**

This task will be performed when the boat is underway during daylight hours. The task will be performed during normal unit training and lecture programs pertaining to boat operations. Where practicable, the instructions should be followed by related underway exercises. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The instructor will ask the trainee to state the proper jacket water temperature range and at what temperature the alarm will sound. Upon being given the casualty symptoms, the trainee will simulate and state correct procedures to be taken as follows:

Performance Criteria	Completed (Initials)
1. Bring throttle to <i>clutch ahead</i> .	_____
2. Check sea suction valve for proper alignment and any coolant in bilge.	_____
3. Check for raw water overboard discharge.	_____
4. Check raw water and jacket water pumps.	_____
5. Check all coolant lines for leaks.	_____
6. Check expansion tank for proper level only after engine has cooled down enough to safely remove cap.	_____
7. Check engine temperature. If temperature continues to rise, secure engine.	_____
8. Check lube oil for milky appearance.	_____
<b>NOTE</b>  Periodically rotate the engine with the starter while the engine is secured and the fuel stop is in the <i>up</i> position, to prevent seizures until engine cools.	

**Instructor****Date****Comments**

**TASK ENG-04-11-30SPC      Overheating Shaft Packing Gland****References**

- a. Applicable Technical Manuals

**Conditions**

This task will be performed when the boat is underway during daylight hours. The task will be performed during normal unit training and lecture programs pertaining to boat operations. Where practicable, the instructions should be followed by related underway exercises. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, after being given the casualty symptoms, must accurately identify the casualty and perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Reduce speed, but do not secure the engine or shaft.	_____
2. Cool down the shaft and packing gland with raw water.	_____
3. Back off hex nuts on gland to loosen packing until enough leakage is obtained to keep shaft and gland cool (normally 6-10 drops of water per minute).	_____
<b>CAUTION !</b> Use caution when working in the vicinity of a rotating shaft.	_____
4. Adjust and recheck as needed to obtain normal shaft and packing gland temperatures throughout the entire speed range.	_____
5. If actions above do not solve casualty, call unit for assistance.	_____

**Instructor****Date****Comments**

**TASK ENG-04-12-30SPC**

**Draw the SPC Systems**

**References**

- a. Applicable Technical Manuals

**Conditions**

This task will be performed pierside. Trainee must accomplish task without prompting or use of a reference.

**Standards**

The trainee must correctly trace out the following systems:

Performance Criteria	Completed (Initials)
1. Trace out and draw the following systems: <ul style="list-style-type: none"> <li>a. Fuel oil system.</li> <li>b. Raw water cooling system.</li> <li>c. Freshwater system.</li> <li>d. Hydraulic steering system.</li> </ul>	<div style="border-bottom: 1px solid black; height: 1.2em; width: 100%;"></div>

**Instructor**

**Date**

**Comments**



## Section E. 49' Buoy Utility Stern Loading (BUSL) Boat

### Introduction

The following are objectives of Division Five:

- **Demonstrate** knowledge of the casualties and discrepancies that would prevent a 49' BUSL from getting underway.
- **Demonstrate** the ability to perform Engineering Casualty Control on a 49' BUSL.

### In this section

This section contains the following tasks:

Task Number	Task	See Page
ENG-05-01-49BUSL	Locate Components and Accessories of the BUSL Propulsion System	2-95
ENG-05-02-49BUSL	List the Disabling Casualties and Restrictive Discrepancies that Prevent the 49' BUSL from Getting Underway	2-97
ENG-05-03-49BUSL	Conduct a Pre-Start Check-Off on the 49' BUSL	2-98
ENG-05-04-49BUSL	Start the 49' BUSL (Generator Set and Main Engines)	2-99
ENG-05-05-49BUSL	Secure the 49' BUSL After Operations	2-101
ENG-05-06-49BUSL	Loss of Fuel Oil Pressure	2-102
ENG-05-07-49BUSL	Fire in the Engine Room	2-103
ENG-05-08-49BUSL	Steering Casualty	2-104
ENG-05-09-49BUSL	Striking a Submerged Object	2-105
ENG-05-10-49BUSL	Reduction Gear Failure	2-106
ENG-05-11-49BUSL	Loss of Lube Oil Pressure	2-107
ENG-05-12-49BUSL	Main Engine High Water Temperature	2-108
ENG-05-13-49BUSL	Excessive Shaft Seal Leakage	2-110
ENG-05-14-49BUSL	Flooding	2-111
ENG-05-15-49BUSL	Draw the 49' BUSL Systems	2-112



**TASK ENG-05-01-49BUSL Locate Components and Accessories of the BUSL Propulsion System**

**References**

- a. *Boat Crew Seamanship Manual*, COMDTINST M16114.5 (series)
- b. *49' BUSL Operator's Handbook*, COMDTINST M16114.22 (series)

**Conditions**

This task will be performed pierside, while normal unit training and lecture programs pertaining to boat operations are being conducted. Where practicable, the pierside instructions should be followed by related underway exercises.

**Standards**

The trainee, while aboard a BUSL, without reference material, must locate components and accessories of the propulsion system as listed below:

Performance Criteria	Completed (Initials)
1. Locate the main engines and state the following: a. Make and model. b. Horsepower of each engine. c. Direction of shaft rotation of each engine. d. Oil capacity and type of oil used in the main engines. e. Describe the Airsep system.	_____
2. Locate the engine and AC generator emergency shutdown controls.	_____
3. Locate the following gauges for each engine and state their normal range readings: a. Coolant temperature. b. Lube oil pressure. c. Marine gear oil pressure.	_____
4. Describe the fuel oil system: a. State the location and capacity of the fuel tanks and why the tanks are not filled to 100 percent capacity. b. State the usable capacity of each tank. c. State the type of fuel used. d. Locate the fill pipes and sounding rods. e. Locate the fuel filters. f. Locate both fuel supply emergency shutoff stations.	_____
5. Describe the engine cooling system: a. State the type of system used. b. State the number and location of keel coolers. c. Locate the engine coolant filter. d. State how the engine and marine gear are cooled. e. State the jacket water system capacity of each engine. f. Locate the marine gear oil cooler. g. Locate the engine oil cooler.	_____



Performance Criteria	Completed (Initials)
<p>6. Describe the engine alarm system:</p> <ul style="list-style-type: none"> <li>a. State the purpose of the engine alarm system and at what temperature or pressure the alarms are activated.</li> <li>b. Locate the following: <ul style="list-style-type: none"> <li>(1) High jacket water temperature light.</li> <li>(2) Oil pressure light.</li> <li>(3) Alarm cutoff switches.</li> </ul> </li> </ul>	_____
<p>7. Locate the marine gear and state the following:</p> <ul style="list-style-type: none"> <li>a. Make and model.</li> <li>b. Oil capacity and type of oil used in the marine gear.</li> <li>c. Gear ratio in <i>forward</i> and <i>reverse</i>.</li> <li>d. Direction of rotation, both propellers in <i>forward</i> and <i>reverse</i>.</li> </ul>	_____
<p>8. Describe the boat's propellers and state the following:</p> <ul style="list-style-type: none"> <li>a. Diameter and pitch.</li> <li>b. Number of blades.</li> </ul>	_____
<p>9. Locate the main engine jacket water heaters and state the following:</p> <ul style="list-style-type: none"> <li>a. The purpose of the heaters.</li> <li>b. Operating temperature range of the system.</li> <li>c. The location of the breakers for the main engine jacket water heaters.</li> </ul>	_____
<p>10. Locate and state the purpose of the fixed CO<sub>2</sub> fire extinguishing system:</p> <ul style="list-style-type: none"> <li>a. CO<sub>2</sub> activation pull handle.</li> <li>b. Manual activation lever.</li> <li>c. State delay time once activated.</li> <li>d. Audible alarm system.</li> </ul>	_____

Instructor

Date

Comments

**TASK ENG-05-02-49BUSL List the Disabling Casualties and Restrictive Discrepancies that Prevent the 49' BUSL from Getting Underway**

**References**

- a. *49' BUSL Operator's Handbook*, COMDTINST M16114.22 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed pierside while normal unit training and lecture programs pertaining to small boat operations are being conducted. Where practicable, the pierside instructions should be followed by related underway exercises.

**Standards**

With reference material and without error, the trainee must state the equipment that, should a casualty or discrepancy occur, will prevent a BUSL from getting underway for an operational mission. The trainee must know the difference between disabling casualties and mission-critical casualties. The trainee must know what steps must be followed when a casualty or discrepancy is found.

Performance Criteria	Completed (Initials)
1. State the equipment that is listed in <i>Appendix D (Disabling Casualties)</i> , <i>49' BUSL Operator's Handbook</i> .	_____
2. State the equipment that is listed in <i>Appendix E (Restrictive and Major Discrepancies)</i> , <i>49' BUSL Operator's Handbook</i> .	_____

**Instructor**

**Date**

**Comments**



**TASK ENG-05-03-49BUSL Conduct a Pre-Start Check-Off on the 49' BUSL**

**References**

a. *49' BUSL Operator's Handbook*, COMDTINST M16114.22 (series)

**Conditions**

This task will be performed pierside under the direct supervision of an instructor when making preparations for getting underway, or while normal unit training and lecture programs pertaining to boat operations are being conducted.

**Standards**

The trainee must properly complete all steps below in order to successfully complete this task:

Performance Criteria	Completed (Initials)
1. Inspect bilges for excessive amounts of water. Look for signs of spilled fuel or oils. Pump and clean as necessary.	_____
2. Sound fuel oil tank. Ensure fuel oil is maintained at 95 percent (750 gallons). Fuel sounding tubes are port and starboard side forward of the buoy deck.	_____
3. Check the following fluid levels:	_____
<b>CAUTION !</b> Do not open the coolant expansion tank cap on a hot engine.	
a. Engine oil level filled to FULL mark. b. Reduction gear oil filled at least to FULL mark.	
<b>NOTE</b> Reduction gear oil will normally be above the H mark when the reduction gear is not turning. The reduction gear oil level must be checked again with the engine running at low idle. At low idle, the level must be between the L and the H marks on the dipstick.	
c. Check coolant by removing cap and looking into the expansion tank, it should be full. The fluid recovery tank should be ¼ to ½ full.	
4. Ensure air intake is clear and machinery space ventilation flapper is <i>open</i> .	_____
5. Check sea strainers for cleanliness and open sea suction valves.	_____
6. Ensure fuel supply valves are <i>open</i> to fuel tank.	_____
7. Check all belts for proper tension.	_____
8. Ensure all breakers on 120-VAC power panel are <i>on</i> including: a. LC1. b. Lighting and power panel (01-7-1). c. Galley panel (2-6-0). d. Machinery panel (2-4-1).	_____
9. Ensure all breakers on all 24-VDC power panels are <i>on</i> including: a. LC2 (Machinery Space). b. Pilothouse.	_____

**Instructor**

**Date**

**Comments**

**TASK ENG-05-04-49BUSL Start the 49' BUSL (Generator Set and Main Engines)****References**

- a. *49' BUSL Operator's Handbook*, COMDTINST M16114.22 (series)

**Conditions**






This task will be performed pierside under the direct supervision of an instructor when making preparations for getting underway, or while normal unit training and lecture programs pertaining to boat operations are being conducted.

**Standards**

The trainee must properly complete all steps below in order to successfully complete this task:

Performance Criteria	Completed (Initials)
1. The following procedure must be performed in preparation for generator light off:	_____
<b>CAUTION !</b> Always let the engine cool down before removing the expansion tank coolant pressure cap. Turn the cap slowly and do not open fully until the pressure is relieved. Do not open the cap on a hot engine.	
<ul style="list-style-type: none"> <li>a. Verify the coolant expansion tank level is full.</li> <li>b. Check the oil level. It should be just below the HIGH level mark on the dipstick.</li> <li>c. Ensure that the fuel system is aligned to support operation of the diesel generator set.</li> <li>d. Visually inspect the bottom of the duplex fuel oil filter bowl for the presence of water and sediment. Drain and dispose of as required.</li> <li>e. Visually inspect the engine for loose or missing components and repair as required.</li> </ul>	
2. The following procedures must be performed to light off the generator set: <ul style="list-style-type: none"> <li>a. Hold the START-RUN-STOP switch at the local panel in the <i>start</i> position.</li> <li>b. If the engine starts, release the switch and verify positive lube oil pressure. Stop the engine immediately if no oil pressure or less than 20 PSI is indicated on the oil pressure gauge.</li> <li>c. Once the engine has started, verify that the oil pressure is 35-60 PSI and that the coolant temperature is between 170 and 210 °F during operation.</li> </ul>	_____
3. The following procedures must be performed to transfer power from shore to ship: <ul style="list-style-type: none"> <li>a. Ensure the ship service diesel generator is operating.</li> <li>b. Verify the engine parameters are normal.</li> <li>c. Verify at the generator local control panel the generator output of 120 VAC, 60 Hz; that the voltage regulator is in <i>automatic</i>; and that the generator output breaker is <i>closed</i>.</li> <li>d. At LC1, open the shore power breaker then close the generator breaker.</li> <li>e. At LC1, verify readings, frequency, volts amps and grounds.</li> <li>f. At LC1, verify the breakers for the lighting and power panel (01-7-1), the galley panel (2-6-0) and the machinery panel (2-4-1) are <i>closed</i>.</li> <li>g. Open shore power feed breaker on the pier.</li> <li>h. Disconnect and stow shore power cable.</li> </ul>	_____
4. The following procedures must be performed to transfer power from ship to shore: <ul style="list-style-type: none"> <li>a. Verify shore power is available and capable of handling the boat's in port requirements. The shore-tie breaker capacity is 100 amps.</li> <li>b. Connect the shore power cable to the boat's shore power receptacle.</li> <li>c. Energize the shore power feeder breaker on the pier.</li> <li>d. At LC1, verify readings, frequency, volts, amps, and grounds.</li> <li>e. At LC1, open the generator breaker and close the shore power breaker.</li> <li>f. With all loads removed from generator set, run for five minutes to cool down. Momentarily position the CONTROL PANEL switch on the local generator control panel to the <i>stop</i> position.</li> </ul>	_____
5. The following procedures must be performed to start the engines: <ul style="list-style-type: none"> <li>a. Set throttle levers to <i>neutral</i> position at all operating stations, select control station, ensure proper fuel system alignment, energize shaft cooling pump, and secure hot starts.</li> </ul>	_____



Performance Criteria	Completed (Initials)
<b>NOTE</b>  If the 24-VDC vital power panels and START switches are energized from the engine room, the throttle alarms and alarm panel in the pilothouse must be acknowledged before starting the main diesel engines.	
<b>NOTE</b>  During light off, the throttle must be recognized prior to starting the engine.	
<b>CAUTION !</b> Engine will not start without oil pressure (10 PSI minimum).	
b. Depress the START button at least three or more times until sufficient oil pressure develops to let the engine start. Do not hold the button. Initial start-up should occur at the local panel. c. Repeat the previous step for the second engine.	
<b>NOTE</b>  There are two banks of batteries connected to two 4-position battery switches. One switch is for vitals, the other for starting. If the engine will not start on BANK 1, switch to BANK 2. If the engine still won't start, switch to BOTH.	
d. Visually check the gauges in the engine room for proper operation and operating ranges.	
6. The following steps must be completed prior to getting underway: a. Close (turn <i>on</i> ) all of the remaining breakers on the 24-VDC and 120-VAC power panels. b. Energize and test all installed electronic components. c. Conduct operational test on the steering system. Ensure stop-to-stop movement on the rudder angle indicator. d. When a control station is selected with the throttle levers in <i>neutral</i> , the red STATION ACTIVE light should illuminate. e. Test throttle operation in <i>forward</i> and <i>reverse</i> .	_____
<b>NOTE</b>  Depressing and holding the STATION ACTIVE button for more than one second disables all control stations; gearboxes return to <i>neutral</i> and engines return to <i>idle</i> . To regain control, place the throttle levers in the <i>neutral</i> position and momentarily depress the STATION ACTIVE button again.	
<b>NOTE</b>  The STATION ACTIVE light will flash during station transfer if the throttle position at the new station is not matched to the old station.	
f. Repeat steps c, d and e at each control station. g. Ensure gear is properly stowed and watertight integrity is set. h. Inform coxswain on the status of all engineering and electronic systems and if the boat is ready to get underway. i. Ensure potable water tank is at 95 percent (300 gallons). j. Ensure sewage tank is less than 1/3 full (83 gallons) or empty. k. Energize the electronics in the following order: (1) Standard Workstation III (log in as user prior to proceeding to next step). (2) Energize DGPS. (3) Energize the universal marine interface (UMI). (4) Energize remaining electronics. (5) Switch IN-PORT/UNDERWAY toggle switch on central alarm panel to <i>underway</i> .	

Instructor \_\_\_\_\_ Date \_\_\_\_\_

Comments \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**TASK ENG-05-05-49BUSL    Secure the 49' BUSL After Operations****References**a. *49' BUSL Operator's Handbook*, COMDTINST M16114.22 (series)**Conditions**

This task will be accomplished whenever returning to unit, or unit training is being conducted pertaining to small boat operations. The trainee will complete the task under the direct supervision of an instructor.

**Standards**

The trainee must properly complete all steps below in order to successfully complete this task:

Performance Criteria	Completed
1. Switch IN-PORT/UNDERWAY toggle switch to in-port.	_____
2. Secure all electrical and electronic components in the pilothouse.	_____
3. Secure engines using pushbuttons in the pilothouse or engine room.	_____
4. Shift electrical load from ship to shore power.	_____
5. Energize equipment breakers in the 120-VAC power panel in the machinery space. Ensure battery charger is operating normally.	_____
6. Secure all breakers in the 24-VDC power panel in the machinery space except for those required to maintain fire, flooding, and lighting systems.	_____
7. Secure start system BATTERY CUTOFF switch.	_____
8. Secure fuel supply valves to engine.	_____
9. Close generator seawater suction valve.	_____
10. Check all machinery fluid levels and refill as necessary.	_____
<b>CAUTION !</b> Do not check engine coolant levels until temperature has dropped to 140 °F or below.	
<b>NOTE</b> It may be necessary to wait 30 minutes to obtain an accurate reading on engine lube oil levels.	
11. Conduct a visual inspection of the engine room bilges for any obvious abnormalities.	_____
12. Clean engine room bilges and machinery.	_____
13. Sound fuel oil tank and refill to 95 percent (750 gallons).	_____
14. Secure all watertight doors, hatches, and covers. Close all weather-tight doors.	_____
15. If directed, wash the boat down with freshwater.	_____
<b>NOTE</b> Keeping the boat clean and neat is very important to control corrosion. Maintaining corrosion control is the responsibility of everyone in the crew.	
<b>NOTE</b> The mission is not complete until the boat is ready for the next mission.	

**Instructor****Date****Comments**

**TASK ENG-05-06-49BUSL    Loss of Fuel Oil Pressure****References**

- a. *Boat Crew Seamanship Manual*, COMDTINST M16114.5 (series)
- b. *49' BUSL Operator's Handbook*, COMDTINST M16114.22 (series)

**Conditions**

This task can be performed pierside or underway during daylight hours. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. The coxswain should reduce the affected engine RPMs to <i>clutch ahead</i> .	_____
2. The engineer should proceed to the engine room, look through the portlight in the engine room door to ensure that it is safe to enter.	_____
3. If it is safe to enter, check the bilge for any signs of fuel leakage.	_____
4. Check the engine fuel system components for leaks and security. Check the emergency fuel cutout valves to ensure that they are <i>open</i> .	_____
5. Check the primary fuel filters for accumulated sediment and water in the bowls. Shift to off-line filter. Re-prime the system.	_____
6. Check the entire fuel system for obvious leaks; check fuel tank level and check for presence of water in fuel.	_____
7. Restart the engine and check for proper operation.	_____
8. If the problem still persists, secure the engine.	_____

**Instructor****Date****Comments**

**TASK ENG-05-07-49BUSL Fire in the Engine Room****References**



- a. *Boat Crew Seamanship Manual*, COMDTINST M16114.5 (series)
- b. *49' BUSL Operator's Handbook*, COMDTINST M16114.22 (series)
- c. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task can be performed while underway or pierside. The instructor will simulate the casualty by providing the symptoms to the trainee. Given a BUSL with required fire fighting equipment and installed systems, take corrective action.

**Standards**

Trainee shall demonstrate proper methods of controlling and extinguishing an engine room fire too large to be combated with only the portable fire extinguishers aboard, in accordance with the steps listed below:

Performance Criteria	Completed (Initials)
1. The coxswain should secure the engines and generator and inform all crew members.	_____
2. The engineer should proceed to the machinery space and ensure the engine room watertight door is tightly closed, then secure the fuel oil by pulling the emergency fuel cutout valves.	_____
3. The engineer should try to determine size and source of fire by looking through the portlight in the watertight door. If fire is observed or cause of smoke cannot be determined, discharge the CO <sub>2</sub> system.	_____
4. The engineer should energize the CO <sub>2</sub> system by releasing the locking pin and depressing the handle on the CO <sub>2</sub> system actuator or by pulling the ring at the CO <sub>2</sub> bottle.	_____
5. Notify the unit once the situation is under control.	_____
<b>NOTE</b>  There is a 30-second delay built into the CO <sub>2</sub> system.	_____
6. Keep the engine room secured until towed ashore and secured.	_____
<b>WARNING</b>  It is extremely dangerous to enter a compartment during or after a fire. After the engine room has been flooded with CO <sub>2</sub> , extensive ventilation is necessary to ensure safety when entering, however, any introduction of oxygen into the compartment may ignite a fire reflash. Keep the space sealed until towed ashore and secured.	_____
7. As much as possible, stay off of the after deck as the heat may have caused structural damage.	_____

**Instructor****Date****Comments**

**TASK ENG-05-08-49BUSL    Steering Casualty****References**


- a. *49' BUSL Operator's Handbook*, COMDTINST M16114.22 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed while underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Reduce engine RPMs to <i>clutch ahead</i> and inform the crew. Ensure the steering station is active. Check steering at both fore and aft stations. Keep engines operating to maintain maneuverability.	_____
2. Check the expansion tank level in the pilothouse and steering gear hydraulic reservoir and components in the lazarette.	_____
3. Check the machinery space for presence of hydraulic oil leaks on lines that pass through the space.	_____
<b>NOTE</b>  If system is intact and pump failure is suspected, rudders may be centered by using the local control valve.	
4. Verify that the steering system HPU breaker on the 24-VDC panel LC2 in the engine room is closed/on.	_____
5. Verify that the autopilot and steering control power breaker at the 24-VDC power panel in the pilothouse is closed/on.	_____

**Instructor****Date****Comments**

**TASK ENG-05-09-49BUSL Striking a Submerged Object**

**References**


- a. 49' BUSL Operator's Handbook, COMDTINST M16114.22 (series)
- b. Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)

**Conditions**

This task can be performed while underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Reduce engine RPMs throttles to <i>neutral</i> , and try to determine what the boat hit; inform the rest of the crew.	_____
2. Check for flooding. Verify status of bilge alarms and physically check areas below the waterline.	_____
3. The engineer and a crewman should proceed to the machinery space to check shafting for damage.	_____
4. The crewman should check all forward compartments for damage. The engineer should check the engine room and lazarette for damage. Make reports to the coxswain.	_____
5. Individually bring up the engine RPMs to determine range and severity of vibration. Also, check shaft seals for leakage.	_____
6. Maintain engine RPMs, 200 RPM below range of vibration. If vibration is too severe, place that shaft into <i>neutral</i> or secure engine.	_____
<b>NOTE</b>  If possible, the boat should be hoisted to determine extent of damage, especially if there is a vibration.	

**Instructor**

**Date**

**Comments**

**TASK ENG-05-10-49BUSL    Reduction Gear Failure****References**


- a. *Boat Crew Seamanship Manual*, COMDTINST M16114.5 (series)
- b. *49' BUSL Operator's Handbook*, COMDTINST M16114.22 (series)

**Conditions**

This task can be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Bring the throttles back to <i>neutral</i> ; ensure the ACTIVE light is lit at the control station in use. Take control at other station and verify throttle operation. If the light is not lit and control cannot be taken, secure the affected engine(s).	_____
2. The engineer should proceed to the machinery space and check throttle control system breakers on the 24-VDC power panel to ensure the breakers have not tripped.	_____
3. Ensure cables are attached to reduction gear controls.	_____
4. The engineer should remove the deck plates to examine the affected reduction gear and check for oil leaks.	_____
5. Check the reduction gear lube oil level.	_____
6. If no leaks are present and the oil level is full, restart the engine and observe clutch apply pressure (230 - 290 PSI when the clutch is engaged).	_____
7. If the clutch apply pressure is not sufficient, secure the engine and reduction gear. Allow engine to cool and check jacket water system for the presence of oil.	_____
8. If all mechanical checks have been made, proceed to troubleshooting the electronic controls.	_____
<b>NOTE</b>  In the event of reduction gear electronic control failure, the reduction gear control valve can be operated manually by disconnecting the push-pull cable and operating the selector valve manually.	_____
9. Attempt to take throttle control at each of the remaining throttle control stations.	_____
10. If the affected transmission will not respond electronically to clutch engagement, manually lock the clutch in the forward station and proceed to port for repairs.	_____

**Instructor****Date****Comments**

**TASK ENG-05-11-49BUSL    Loss of Lube Oil Pressure**

**References**

- a. *49' BUSL Operator's Handbook*, COMDTINST M16114.22 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The instructor will ask the trainee to state the proper oil pressure range and at what pressure the alarm will sound. The trainee must state the correct pressures. The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. The coxswain should reduce the affected engine RPMs to <i>clutch ahead</i> .	_____
<b>CAUTION !</b> If oil pressure drops below 15 PSI, <i>stop</i> the engine.	
2. The engineer should proceed to the engine room, look through the portlight in the engine room door to ensure that it is safe to enter.	_____
3. If it is safe to enter, enter the engine room and check the bilge for oil.	_____
4. Check the engine lube oil for quantity and quality and for obvious leaks.	_____
5. Check the jacket water system for the presence of oil.	_____
6. If the cause is not correctable, do not restart the engine.	_____
<b>NOTE</b> In an emergency, oil pressure can be run as low as 5 PSI at <i>idle</i> and 32 PSI at <i>full load</i> .	

**Instructor**

**Date**

**Comments**

**TASK ENG-05-12-49BUSL Main Engine High Water Temperature****References**




- a. *49' BUSL Operator's Handbook*, COMDTINST M16114.22 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed while underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The instructor will ask the trainee to state the proper jacket water temperature range and at what temperature the alarm will sound. The trainee must state the correct temperatures. The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. The coxswain should reduce the affected engine RPMs to <i>clutch ahead</i> .	_____
2. The engineer should proceed to the engine room, look through the portlight in the engine room door and report if steam is present. Also, verify if the affected engine jacket water system is intact.	_____
3. If steam is present or if the temperature is 205 °F or above, secure the affected engine.	_____
<b>WARNING</b>  If steam is flowing from the expansion tank vent, the engine(s) should be secured and cooled naturally. If the pressure is released when extremely hot by removing the expansion tank cover, the coolant will either flash to steam or boil with a serious potential for injury.	
4. If no steam is present, enter the engine room and check the bilge and check the brass pipes on the outboard side of the affected engine. <ol style="list-style-type: none"> <li>a. If the pipe is cool, the jacket water system for that engine is probably operating normally, therefore, the engineer should make initial casualty control checks for the jacket water system.</li> <li>b. If the pipe is hot, the engineer should make casualty control checks for the jacket water system.</li> </ol>	_____
5. Take the following action if fouling of the keel cooler is suspected: <ol style="list-style-type: none"> <li>a. Have coxswain change direction of vessel from <i>ahead</i> to <i>astern</i> to try to force any temporary fouling off of the cooler.</li> <li>b. Monitor jacket water temperature, and stop engine if temperature continues to rise and keel cooler fouling cannot be cleared.</li> </ol>	_____
6. Take the following actions to check the function of the jacket water system: <ol style="list-style-type: none"> <li>a. Check the jacket water level. Check the engine and bilge for leakage. Replace fluid if necessary.</li> </ol>	_____
<b>WARNING</b>  Anti-freeze is poisonous. Do not inhale the fumes.	
<ol style="list-style-type: none"> <li>b. Inspect the jacket water pump for normal function.</li> <li>c. Check lube oil for proper quantity and quality.</li> <li>d. If jacket water leaks are found, if the pump is inoperative, or if temperature continues to climb, secure the engine.</li> </ol>	
<b>NOTE</b>  Oil alarms and sensors are directly related to engine temperature. An overheating engine will often set off lube oil alarms.	
<b>CAUTION !</b> If after all efforts have been made at casualty control, including reducing the engine load, the engine temperature does not decrease, secure the engine. The manufacturer recommends shutdown of the engine if the temperature exceeds 220 °F.	

<b>Instructor</b>	_____	<b>Date</b>	_____
<b>Comments</b>	_____ _____ _____		

**TASK ENG-05-13-49BUSL Excessive Shaft Seal Leakage****References**

- a. *Boat Crew Seamanship Manual*, COMDTINST M16114.5 (series)
- b. *49' BUSL Operator's Handbook*, COMDTINST M16114.22 (series)

**Conditions**

This task can be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, after being given the casualty symptoms, must accurately identify the casualty and perform the correct procedures following the steps listed below:

Performance Criteria	Completed (Initials)
1. The engineer should inform the crew of the casualty.	_____
2. The coxswain should place throttles to <i>neutral</i> and secure the affected engine.	_____
<b>CAUTION !</b> De-energize the START switch in the engine room to prevent inadvertent starting of the engine while working around the shaft.	
3. The engineer should realign the seal assembly and check to see if the seal clamp has backed off.	_____
4. If the clamp ring remains tight, restart the engine after realignment and roll the shaft. If excessive water continues to leak from the seal, secure the engine and shaft.	_____
5. The engineer should then loosen the seal clamp ring and reposition it in a position that properly compresses the seal bellows.	_____
6. Restart the engine and roll the shaft. If the seal continues to leak excessively, secure the engine.	_____
7. Secure the shaft cooling water pump.	_____
8. Secure the affected shaft with line to prevent rotation and subsequent damage. Perform required damage control to slow the rate of leakage.	_____

**Instructor****Date****Comments**

**TASK ENG-05-14-49BUSL Flooding**

**References**



- a. *49' BUSL Operator's Handbook*, COMDTINST M16114.22 (series)
- b. *Boat Crew Seamanship Manual*, COMDTINST M16114.5 (series)

**Conditions**

This task can be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, after being given the casualty symptoms, must accurately identify the casualty and perform the correct procedures following the steps listed below:

Performance Criteria		Completed (Initials)
1. The engineer or coxswain will check the control panel to identify the space where flooding is indicated. Push the RESET button to silence the alarm.		_____
<b>WARNING</b>  In the event of engine room flooding, secure the generator set before entering the space. If flooding is detected in other spaces, secure the power panels that feed the spaces before entering.		_____
<b>NOTE</b>  A sounding of the alarm will indicate water in the bilge space.		_____
2. The engineer and a crew member will proceed to the flooded space indicated by the control panel, look through the portlight in the watertight door and report status to coxswain. If directed, enter the space to investigate.		_____
3. The engineer shall report to the coxswain the extent, cause and corrective actions necessary to control or stop the flooding.		_____
4. The crew will prepare to apply basic casualty control procedures, making ready the damage control kit and dewatering pump as required.		_____
5. The crew shall check the material condition of each compartment, then report the results to the coxswain.		_____
6. After damage has been assessed, the coxswain shall determine whether it is safe to proceed with the mission or return to the unit.		_____
<b>CAUTION !</b> The bilge flooding alarm system is designed to notify the crew of an onboard <b>EMERGENCY</b> underway as well as dockside. This system should be confirmed operational prior to and upon return from any missions or sorties.		_____

**Instructor**

**Date**

**Comments**

**TASK ENG-05-15-49BUSL    Draw the 49' BUSL Systems****References**a. *49' BUSL Operator's Handbook*, COMDTINST M16114.22 (series)**Conditions**

The task will be performed pierside. Trainee must accomplish task without prompting or use of a reference.

**Standards**

The trainee must correctly trace out the following systems:

Performance Criteria	Completed (Initials)
1. Trace out and draw the following systems: <ul style="list-style-type: none"> <li>a. Fuel oil system.</li> <li>b. Engine cooling water system.</li> <li>c. Potable water system.</li> <li>d. Hydraulic steering system.</li> <li>e. Lube oil system.</li> <li>f. Fixed CO<sub>2</sub> fire fighting system.</li> <li>g. Installed dewatering system.</li> <li>h. Reduction gear lube oil system.</li> <li>i. Buoy handling system.</li> <li>j. Gray water and sewage.</li> </ul>	_____

**Instructor****Date****Comments**

## Section F. 55' Aids To Navigation Boat (ANB)

### Introduction

The following are objectives of Division Six:

- **Demonstrate** knowledge of the casualties and discrepancies that would prevent a 55' ANB from getting underway.
- **Demonstrate** the ability to perform Engineering Casualty Control on a 55' ANB.

### In this section

This section contain the following tasks:

Task Number	Task	See Page
ENG-06-01-55ANB	Locate Components and Accessories of the ANB Propulsion System	2-115
ENG-06-02-55ANB	List the Disabling Casualties and Restrictive Discrepancies that Prevent the 55' ANB from Getting Underway	2-117
ENG-06-03-55ANB	Conduct a Pre-Start Check-Off on the ANB	2-118
ENG-06-04-55ANB	Start the ANB (Generator Set and Main Engines)	2-119
ENG-06-05-55ANB	Secure the ANB After Operations	2-121
ENG-06-06-55ANB	Engine Will Not Turn Over When the Starter Button is Pushed	2-122
ENG-06-07-55ANB	Engine Running Uneven or Stalls	2-123
ENG-06-08-55ANB	Fire in the Engine Room	2-124
ENG-06-09-55ANB	Loss of Steering	2-125
ENG-06-10-55ANB	Loss of Steering (Jammed Rudder)	2-126
ENG-06-11-55ANB	Collision with a Submerged Object	2-127
ENG-06-12-55ANB	Reduction Gear Failure	2-128
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ENG-06-17-55ANB	Draw the ANB Systems	2-133



**TASK ENG-06-01-55ANB      Locate Components and Accessories of the ANB Propulsion System****References**

- a. *Boat Crew Seamanship Manual*, COMDTINST M16114.5 (series)
- b. 55' ANB Information Book

**Conditions**

The task will be performed pierside, while normal unit training and lecture programs pertaining to boat operations are being conducted. Where practicable, the pierside instructions should be followed by related underway exercises.

**Standards**

The trainee, while aboard an ANB, without reference material, must locate components and accessories of the propulsion system as listed below:

Performance Criteria	Completed (Initials)
1. Locate the main engines and state the following: <ol style="list-style-type: none"> <li>a. Make and model.</li> <li>b. Horsepower of each engine.</li> <li>c. Direction of shaft rotation of each engine.</li> <li>d. Oil capacity and type of oil used in the main engines.</li> <li>e. Describe the Airsep system.</li> </ol>	_____
2. Locate the following gauges for each engine and state their proper readings at <i>idle</i> and <i>cruising</i> speeds. <ol style="list-style-type: none"> <li>a. Coolant temperature.</li> <li>b. Lube oil pressure.</li> <li>c. Marine gear oil pressure.</li> </ol>	_____
3. Describe the fuel oil system: <ol style="list-style-type: none"> <li>a. State the location and capacity of the fuel tanks and why the tanks are not filled to 100 percent capacity.</li> <li>b. State the usable capacity of each tank.</li> <li>c. State the type of fuel used.</li> <li>d. Locate the fill pipes and sounding rods.</li> <li>e. Locate the fuel filters.</li> <li>f. Locate the emergency fuel shutoff valve.</li> </ol>	_____
4. Describe the engine cooling system: <ol style="list-style-type: none"> <li>a. State the type of system used.</li> <li>b. Locate the seachest and air vent valve.</li> <li>c. Locate the sea suction valve, deicing valve and sea strainer.</li> <li>d. State why the strainers should be cleaned one at a time.</li> <li>e. State how the exhaust gases are cooled.</li> <li>f. State how the engine and marine gear are cooled.</li> <li>g. State the jacket water system capacity of each engine.</li> <li>h. Locate the marine gear oil cooler.</li> </ol>	_____
5. Describe the engine alarm system: <ol style="list-style-type: none"> <li>a. State the purpose of the engine alarm system and at what temperature or pressure the alarms are activated.</li> <li>b. Locate the following:               <ol style="list-style-type: none"> <li>(1) Water temperature light.</li> <li>(2) Oil pressure light.</li> <li>(3) Alarm cutoff switches.</li> </ol> </li> </ol>	_____



Performance Criteria	Completed (Initials)
6. Locate the marine gear and state the following: a. Make and model. b. Oil capacity and type of oil used in the marine gear. c. Gear ratio in <i>forward</i> and <i>reverse</i> . d. Direction of rotation, both propellers in <i>forward</i> and <i>reverse</i> .	_____
7. Describe the boats propellers and state the following: a. Diameter and pitch. b. Number of blades.	_____
8. Locate the main engine jacket water heaters and state the following: a. The purpose of the heaters. b. Operating temperature range of the system. c. The location of the breakers for the main engine jacket water heaters.	_____
9. Locate and state the purpose of the fixed Halon fire extinguishing system: a. Halon cylinder and state the PSI. b. Engine shutdown cylinders. c. Thermal sensors and at what temperature the alarm will sound. d. State what will happen when the Halon cylinder is extinguished. e. Audible alarm system.	_____

Instructor

Date

Comments

**TASK ENG-06-02-55ANB      List the Disabling Casualties and Restrictive Discrepancies that Prevent the 55' ANB from Getting Underway**

<b>References</b>	<ul style="list-style-type: none"> <li>a. 55' ANB Information Book</li> <li>b. <i>Coast Guard Boat Readiness and Standardization Program Manual</i>, COMDTINST M16114.24 (series)</li> </ul>
<b>Conditions</b>	The task will be performed pierside, while normal unit training and lecture programs pertaining to small boat operations are being conducted. Where practicable, the pierside instructions should be followed by related underway exercises.
<b>Standards</b>	With reference material and without error, the trainee must state the equipment that, should a casualty or discrepancy occur, will prevent an ANB from getting underway for an operational mission. The trainee must know the difference between disabling casualties and mission-critical casualties. The trainee must know what steps must be followed when a casualty or discrepancy is found.

Performance Criteria	Completed (Initials)
1. State the disabling casualties for the 55' ANB.	_____
2. State the restrictive discrepancies for the 55' ANB.	_____

<b>Instructor</b>	_____	<b>Date</b>	_____
<b>Comments</b>	_____ _____ _____		

**TASK ENG-06-03-55ANB      Conduct a Pre-Start Check-Off on the ANB****References**

a. 55' ANB Information Book

**Conditions**

This task will be performed pierside under the direct supervision of an instructor when making preparations for getting underway, or while normal unit training and lecture programs pertaining to boat operations are being conducted.

**Standards**

The trainee must properly complete all steps below in order to successfully complete this task:

Performance Criteria	Completed (Initials)
1. Sound fuel tank with sounding rod, fuel should be at or near 95 percent (950 gallons total, 475 gallons per tank).	_____
2. Energize the main breaker on the 24-volt power panel.	_____
3. Check engine room and bilges for unsecured loose gear.	_____
4. Check bilges for water, fuel, and oil.	_____
5. Check the marine gear and engine oil levels.	_____
6. Shift sea strainer handle to ensure it operates freely.	_____
7. Open sea suction valves for main engines.	_____
8. Check for proper valve alignment of fuel system.	_____
9. Check alternator belts for proper tension (no greater than $\frac{7}{16}$ inch per foot of span).	_____
10. Check engine coolant level (it should be 2 inches below the top of the expansion tank).	_____
11. Secure pierside shore power and disconnect shore-tie cable from the boat.	_____
<b>CAUTION !</b> Never start or run the engines with the shore-tie energized. Damage to the alternator may occur.	
<b>CAUTION !</b> Always let the engine cool down before removing the expansion tank coolant pressure cap. Turn the cap slowly and do not open fully until the pressure is relieved. Do not open the cap on a hot engine.	
12. Check the coolant expansion tank level. Tank level for a cold engine should be not less than one to two inches from the opening.	_____
13. Check the oil level. It should be just below the HIGH level mark on the dipstick.	_____
14. Ensure that the fuel system is aligned to support operation of the diesel generator set.	_____
15. Visually inspect the bottom of the fuel oil filter bowl for the presence of water and sediment. Drain and dispose of as required.	_____
16. Visually inspect the engine for loose or missing components and repair as required.	_____

**Instructor****Date****Comments**

**TASK ENG-06-04-55ANB     Start the ANB (Generator Set and Main Engines)****References**



- a. 55' ANB Information Book

**Conditions**

This task will be performed pierside under the direct supervision of an instructor when making preparations for getting underway, or while normal unit training and lecture programs pertaining to boat operations are being conducted.

**Standards**

The trainee must properly complete all steps below in order to successfully complete this task:

Performance Criteria	Completed (Initials)
1. Hold the START-RUN-STOP switch at the local panel in the start position. Initial start should occur from the local panel.	_____
2. If the engine starts, release the switch and verify positive lube oil pressure. Stop the engine immediately if no oil pressure or less than 10 PSI is indicated on the oil pressure gauge.	_____
3. Once the engine has started, verify that the oil pressure is 30-50 PSI and that the coolant temperature is 180-195 °F during operation.	_____
4. The following procedures must be performed to transfer power from shore to ship:	_____
<b>NOTE</b>  Shore power supply and diesel generator circuits are interlocked to prevent simultaneous operation. This is accomplished using a mechanical interlock.	
a. Ensure the ship service diesel generator is operating. b. Verify the engine parameters are normal. c. Verify at the generator local control panel the generator output of 120 VAC, 60 Hz. d. Verify that all required breakers on the engine room power panel are closed. e. Open shore power feed breakers on the pier. f. Disconnect and stow shore power cable.	
5. The following procedures must be performed to start the engines:	_____
<b>NOTE</b>  If the 24-VDC vital power panels and START switches are energized from the engine room, the throttle alarms and alarm panel in the pilothouse must be acknowledged before starting the main diesel engines.	
a. Depress the START button at least three or more times until sufficient oil pressure develops to let the engine start. Do not hold the button. Initial start-up should occur at the local panel. b. Repeat the previous step for the second engine. c. Visually check the gauges in the engine room for proper operation and operating ranges.	_____
6. The following steps must be completed prior to getting underway: a. Close (turn on) all of the remaining breakers on the 24-VDC and 120-VAC power panels. b. Energize and test all installed electronic components. c. Conduct a test on the steering wheel. Ensure stop-to-stop movement on the rudder angle indicator. d. Test throttle operation in <i>forward</i> and <i>reverse</i> . e. Ensure gear is properly stowed and watertight integrity is set. f. Inform coxswain on the status of all engineering systems and if the boat is ready to get underway. g. Ensure potable water tank is 100 percent (230 gallons). h. Ensure sewage tank is less than 1/3 full (10 gallons) or empty. i. Check each engine for any fluid leaks or abnormal conditions. j. Check gauges in the engine room.	_____

<b>Instructor</b>	_____	<b>Date</b>	_____
<b>Comments</b>	_____		
	_____		

**TASK ENG-06-05-55ANB      Secure the ANB After Operations****References**

a. 55' ANB Information Book

**Conditions**

This task will be accomplished whenever returning to unit, or unit training is being conducted pertaining to small boat operations. The trainee will complete the task under the direct supervision of an instructor.

**Standards**

The trainee must properly complete all steps below in order to successfully complete this task:

Performance Criteria	Completed (Initials)
1. Secure all electrical and electronic components in the pilothouse.	_____
2. Secure engines using pushbuttons in the pilothouse.	_____
3. Shift electrical load to shore power.	_____
4. Energize equipment breakers in the 120-VAC power panel in the machinery space. Ensure battery charger is operating normally.	_____
5. Secure all breakers in the 24-VDC power panel in the pilothouse except for those required to maintain fire, flooding, and lighting systems.	_____
6. Secure the sea suction valves.	_____
7. If directed, secure start system BATTERY CUTOFF switch.	_____
8. Check all machinery fluid levels and refill as necessary.	_____
<b>CAUTION !</b> Do not check engine coolant levels until temperature has dropped to 140 °F or below.	
<b>NOTE</b> It may be necessary to wait 30 minutes to obtain an accurate reading on engine lube oil levels.	
9. Conduct a visual inspection of the engine room bilges for any obvious abnormalities.	_____
10. Clean engine room bilges and machinery.	_____
11. Sound fuel oil tank and refill to 95 percent (950 gallons, 475 gallons per tank).	_____
12. Secure all watertight doors, hatches, and covers. Close all weather-tight doors.	_____
13. If directed, wash the boat down with freshwater.	_____
<b>NOTE</b> Keeping the boat clean and neat is very important to control corrosion. Having aluminum in contact with dissimilar metal, particularly a copper alloy, can cause major corrosion problems. Something as small as a penny left in the bilge can cause serious damage. Maintaining corrosion control is the responsibility of everyone in the crew.	
<b>NOTE</b> The mission is not complete until the boat is ready for the next mission.	

**Instructor****Date****Comments**



**TASK ENG-06-06-55ANB**

**Engine Will Not Turn Over When the Starter Button is Pushed**

**References**

- a. *Boat Crew Seamanship Manual*, COMDTINST M16114.5 (series)
- b. 55' ANB Information Book

**Conditions**

This task can be performed pierside or underway during daylight hours. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Ensure main power breaker is energized in the 24-volt power panel.	_____
2. Ensure engine starter breaker is energized in the 24-volt power panel.	_____
3. Check battery and starter cables for broken, loose, or corroded connections.	_____
4. If actions above do not solve casualty, call unit for assistance.	_____

**Instructor**

**Date**

**Comments**

**TASK ENG-06-07-55ANB      Engine Running Uneven or Stalls**

<b>References</b>	<p>a. <i>Boat Crew Seamanship Manual</i>, COMDTINST M16114.5 (series)</p> <p>b. 55' ANB Information Book</p>
<b>Conditions</b>	This task will be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.
<b>Standards</b>	The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Ensure fuel supply valve(s) is/are <i>open</i> .	_____
2. Check level of fuel tanks.	_____
3. Check fuel supply lines for air leaks, repair and bleed if necessary.	_____
4. Check fuel filter for contamination.	_____
5. If actions above do not solve casualty, call unit for assistance.	_____

**Instructor** \_\_\_\_\_ **Date** \_\_\_\_\_

**Comments** \_\_\_\_\_

\_\_\_\_\_

**TASK ENG-06-08-55ANB      Fire in the Engine Room****References**

- a. *Boat Crew Seamanship Manual*, COMDTINST M16114.5 (series)
- b. 55' ANB Information Book
- c. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task can be performed while underway or pierside. The instructor will simulate the casualty by providing the symptoms to the trainee. Given a ANB with required fire fighting equipment and installed systems, take corrective action.

**Standards**

Trainee shall demonstrate proper methods of controlling and extinguishing an engine room fire too large to be combated with only the portable fire extinguishers aboard, in accordance with the steps listed below:

Performance Criteria	Completed (Initials)
1. If underway, ensure throttles brought to <i>neutral</i> on both engines, then secured.	_____
2. Notify the crew.	_____
3. Cover all engine room vents prior to actuating Halon.	_____
4. On coxswain command, energize Halon system by pulling pin and actuating the handle (simulate).	_____
5. Note time when Halon system is activated.	_____
6. Secure electrical power.	_____
7. Notify station of situation.	_____
8. Discuss procedures for reentering engine room after Halon is discharged.	_____

**Instructor****Date****Comments**

**TASK ENG-06-09-55ANB      Loss of Steering**

**References**

- a. 55' ANB Information Book
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed while underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Bring throttles to <i>neutral</i> or minimum steerageway <i>clutch</i> position if in a running sea. Try to put the seas on the bow. Steer with the engines.	_____
2. Notify crew of casualty.	_____
3. Check steering system for cause of casualty (i.e. ruptured hose, securing pins missing, and rudder tie rod disconnected or binding).	_____
4. Check system from stern to helm for cause of casualty (i.e. low fluid).	_____
5. Gain control of rudders using the tiller located in the lazarette.	_____
6. If problem cannot be corrected, place engines in <i>neutral</i> .	_____
7. Open bypass valve to operate the tiller.	_____
8. Detach release pin on starboard rudder to disconnect steering cable/hydraulic ram. Open bypass valve.	_____
9. Test rudders for complete range.	_____

**Instructor**

**Date**

**Comments**

**TASK ENG-06-10-55ANB      Loss of Steering (Jammed Rudder)****References**

- a. 55' ANB Information Book
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

The task will be performed while underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Bring throttles to <i>neutral</i> or minimum steerageway clutch position if in a running sea. Try to put the seas on the bow. Steer with the engines.	_____
2. Notify crew of casualty.	_____
3. Check steering system in lazarette for cause of casualty (i.e. ruptured hose, securing pins missing, rudder tie rod disconnected from binding).	_____
4. Check system from stern to helm for cause of casualty.	_____
5. If problem cannot be corrected, place engines in <i>neutral</i> .	_____
6. Remove tiller from stowage and mount tiller on the port rudderpost.	_____
7. Detach release pin on starboard rudderpost to disconnect steering cable/hydraulic ram. Open bypass valve.	_____
8. Exercise rudders to determine which rudder is jammed.	_____
9. Notify station.	_____

**Instructor****Date****Comments**

**TASK ENG-06-11-55ANB Collision with a Submerged Object**

**References**

- a. 55' ANB Information Book
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task can be performed while underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Bring throttles to <i>neutral</i> on both engines.	_____
2. Notify the crew.	_____
3. Proceed to the engine room to check for compartment flooding.	_____
4. Take appropriate measures to reduce flooding, if applicable.	_____
5. Engage engines separately at various speeds to check for vibration.	_____
6. Notify the station of situation.	_____
7. Upon returning to station, check skeg sounding tube for evidence of damage/flooding.	_____

**Instructor**

**Date**

**Comments**

**TASK ENG-06-12-55ANB      Reduction Gear Failure****References**


- a. *Boat Crew Seamanship Manual*, COMDTINST M16114.5 (series)
- b. 55' ANB Information Book

**Conditions**

This task can be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
<ol style="list-style-type: none"> <li>1. Bring engine control to the <i>neutral</i> position for the affected marine gear. Check marine gear lube oil pressure, approximately 195-205 PSI at <i>idle</i>. If there is no pressure, secure engine immediately.               <ol style="list-style-type: none"> <li>a. If pressure is the normal range for idle, approximately 195-205 PSI at <i>idle</i>, place control in <i>clutch ahead</i>. If pressure rises to the clutched in range, but doesn't engage, bring control back to <i>neutral</i> and secure the engine. Malfunction is internal.</li> <li>b. If pressure doesn't rise to the normal clutched in range, check linkage in the control head and at the selector valve.</li> </ol> </li> </ol>	_____
<b>NOTE</b>  Even though the controls and linkage may be actuating the selector valve, mis-adjustment of the linkage may be preventing the gear from engaging. Perform the steps listed below to eliminate faulty linkage or linkage adjustment as the cause of the casualty.	
<ol style="list-style-type: none"> <li>2. Request permission from the coxswain to manually engage the marine gear:               <ol style="list-style-type: none"> <li>a. Disconnect linkage at selector valve and shift lever into <i>forward</i> position. If the marine gear will not engage using this method, secure engine and notify station of situation.</li> <li>b. If the marine gear engages, the problem is in the linkage adjustment or cable clamps in the control head or at the marine gear. Adjust/repair as necessary to obtain positive engagement in <i>forward</i> and <i>reverse</i>.</li> </ol> </li> </ol>	_____

**Instructor****Date****Comments**

**TASK ENG-06-13-55ANB      Loss of Main Engine Lube Oil Pressure**

**References**

- a. 55' ANB Information Book
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The instructor will ask the trainee to state the proper oil pressure range and the pressure at which the alarm will sound. The trainee must state the correct pressures. The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Bring throttles to <i>neutral</i> on both engines.	_____
2. Identify affected engine.	_____
3. Secure affected engine.	_____
4. Notify the crew.	_____
5. Enter engine room.	_____
6. Ensure PKP fire extinguishers on scene.	_____
7. Check for lube oil in bilge area.	_____
8. Check lube oil for quantity and quality.	_____
9. Notify station of situation.	_____
10. Return to station if cause cannot be determined or repaired.	_____

**Instructor**

**Date**

**Comments**

**TASK ENG-06-14-55ANB      Main Engine High Lube Oil Pressure****References**



- a. 55' ANB Information Book

**Conditions**

This task will be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. If lube oil pressure exceeds normal range after engine is at operating temperature, reduce speed and investigate cause.	_____
<b>NOTE</b>  Water intrusion in the engine will cause high lube oil pressure. Leaky engine hatch gaskets in heavy seas or rain can lead to water intrusion at the engine air intakes.	
<b>NOTE</b>  It is necessary to shut the engine down to obtain a correct lube oil level reading.	
2. Check oil on dipstick for milky appearance. <ul style="list-style-type: none"> <li>a. If oil has milky appearance, there is water in the lube oil. Secure the engine.</li> <li>b. If there is no water in the oil, suspect internal mechanical problem. Monitor engine and engine lube oil pressure closely.</li> </ul>	_____
3. Notify station of situation.	_____

**Instructor****Date****Comments**

**TASK ENG-06-15-55ANB      Main Engine High Water Temperature**

**References**


- a. 55' ANB Information Book
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed while underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The instructor will ask the trainee to state the proper jacket water temperature range and the temperature at which the alarm will sound. The trainee must state the correct temperatures. The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Bring throttles to <i>clutch ahead</i> on both engines.	_____
2. Identify affected engine. Check engine temperature. If temperature continues to rise, secure engine.	_____
<b>NOTE</b>  Periodically rotate the engine with the starter while the engine is secured and the fuel stop is in the <i>off</i> position, to prevent seizures until engine cools.	
3. Notify the crew.	_____
4. Check for raw water overboard discharge.	_____
5. Check sea suction valves for proper alignment and any coolant in bilge.	_____
6. Switch strainers and verify system pressure.	_____
7. Check raw water and jacket water pumps.	_____
8. Check all coolant lines for leaks.	_____
9. Check expansion tank for proper level only after engine has cooled down enough to safely remove cap.	_____
10. Check lube oil for milky appearance.	_____
11. Notify station of situation.	_____

**Instructor**

**Date**

**Comments**

**TASK ENG-06-16-55ANB      Overheating Shaft Packing Gland****References**

- a. *Boat Crew Seamanship Manual*, COMDTINST M16114.5 (series)
- b. 55' ANB Information Book

**Conditions**

This task can be performed pierside or underway. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, after being given the casualty symptoms, must accurately identify the casualty and perform the correct procedures following the steps listed below:

Performance Criteria	Completed (Initials)
1. Reduce speed, but do not secure the engine or shaft.	_____
2. Cool down the shaft and packing gland with raw water.	_____
3. Evenly back off hex nuts on gland to loosen packing until enough leakage is obtained to keep shaft and gland cool (normally 6-10 drops of water per minute).	_____
<b>CAUTION !</b> <span style="border: 1px solid black; display: inline-block; width: 300px; height: 1.2em; vertical-align: middle;"></span>	
4. Adjust and recheck as needed to obtain normal shaft and packing gland temperatures throughout the entire speed range.	_____
5. If above actions do not solve the casualty, call unit for assistance.	_____

**Instructor****Date****Comments**

**TASK ENG-06-17-55ANB      Draw the ANB Systems**

**References**

a. 55' ANB Information Book

**Conditions**

The task will be performed pierside. Trainee must accomplish task without prompting or use of a reference.

**Standards**

The trainee must correctly trace out the following systems:

Performance Criteria	Completed (Initials)
1. Trace out and draw the following systems: <ul style="list-style-type: none"> <li>a. Fuel oil system.</li> <li>b. Raw water cooling system.</li> <li>c. Freshwater system.</li> <li>d. Hydraulic steering system.</li> <li>e. Lube oil system.</li> <li>f. Fixed Halon fire fighting system.</li> <li>g. Installed dewatering system.</li> <li>h. Reduction gear lube oil system.</li> </ul>	_____

**Instructor**

**Date**

**Comments**



## Section G. Transportable Port Security Boat (TPSB)

### Introduction

The following are objectives of Division Seven:

- **Demonstrate** knowledge of the casualties and discrepancies that would prevent a TPSB from getting underway.
- **Demonstrate** the ability to perform Engineering Casualty Control on a TPSB.

### In this section

This section contains the following tasks:

Task Number	Task	See Page
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ENG-07-02-TPSB	Locate Components and Accessories of the TPSB	2-138
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**TASK ENG-07-01-TPSB      Conduct a Pre-Start Check-Off on the TPSB**

**References**

a. Unit Check-Off Sheet

**Conditions**

This task shall be performed on a TPSB when making preparations for getting underway, under direct supervision of the Engineer, or while normal unit training and lecture programs pertaining to boat operations are being conducted. All power switches must be in the *off* position, both at the power panels and on the equipment, before energizing the main breaker. The trainee will be assigned as the Engineer.

**Standards**

All steps must be properly completed in order by the trainee, without prompting. Use of a Unit Check-Off Sheet is recommended.

Performance Criteria	Completed (Initials)
1. Energize the main breaker and power switches on the 12-volt circuit breaker panel.	_____
2. Ensure that the main battery barrel switch is in the <i>both</i> position. Ensure the three auxiliary battery switches for the port side, starboard side and electronics are <i>on</i> .	_____
3. Check for excessive water in the bilge. Ensure drain plugs are in.	_____
4. Locate and check engine oil tanks, check levels and prime the system.	_____
5. Check fuel levels. Prime the system.	_____
6. Check steering and steering fluid levels.	_____

**Instructor**

**Date**

**Comments**

**TASK ENG-07-02-TPSB****Locate Components and Accessories of the TPSB****References**

- a. *Boston Whaler Manual*
- b. Applicable Technical Manuals

**Conditions**

This task will be performed at any time onboard a TPSB either dockside or trailered while normal unit training and lecture programs pertaining to boat operations are being conducted. When practicable, the dockside or trailered instructions should be followed by related underway exercises.

**Standards**

In response to the instructor, the trainee must, without error, accomplish the task without use of a reference following the steps listed below:

Performance Criteria	Completed (Initials)
1. Locate the outboards and state the following: <ol style="list-style-type: none"> <li>a. Make and model.</li> <li>b. Horsepower.</li> <li>c. Shaft rotation of each engine.</li> </ol>	_____
2. Locate the engine stop controls.	_____
3. Locate the following gauges for each engine and state their proper readings: <ol style="list-style-type: none"> <li>a. Water temperature.</li> <li>b. Oil level.</li> <li>c. Tachometers.</li> <li>d. Trim level.</li> </ol>	_____
4. Describe the fuel system: <ol style="list-style-type: none"> <li>a. State the location of the fuel tank.</li> <li>b. State the capacity of the fuel tank and type of fuel used (octane requirements).</li> <li>c. State the useable capacity of the fuel tank and why the tank is not topped off.</li> <li>d. Locate the fuel gauge and main fuel tank gauge.</li> <li>e. Locate the filler neck.</li> <li>f. Locate the fuel primer bulb.</li> <li>g. Describe proper grounding procedures for fueling.</li> </ol>	_____
5. Describe the oil system: <ol style="list-style-type: none"> <li>a. State the location of the oil tank.</li> <li>b. State the capacity of the oil tank.</li> <li>c. Locate the oil primer bulb.</li> <li>d. Locate the oil level gauge.</li> </ol>	_____
6. Describe the electrical system: <ol style="list-style-type: none"> <li>a. State the location of the main 12-volt relay.</li> <li>b. State the location of the 12-volt distribution panel.</li> <li>c. Locate the fuse panels for accessories inside the console.</li> <li>d. Locate in-line fuses (yellow in-line fuse holders) from charger to BatMax charging system.</li> </ol>	_____
7. Describe the engine cooling system: <ol style="list-style-type: none"> <li>a. Identified cooling suction.</li> <li>b. Identified the weep hole.</li> <li>c. Stated the flushing procedure.</li> </ol>	_____
8. State the maximum engine RPMs.	_____

<b>Instructor</b>	_____	<b>Date</b>	_____
<b>Comments</b>	_____ _____ _____		

**TASK ENG-07-03-TPSB****Locate Installed Equipment and Fittings on the TPSB****References**

- a. *Boston Whaler Manual*
- b. TPSB Outfit List

**Conditions**

This task will be performed at any time onboard a TPSB either dockside or trailered while normal unit training and lecture programs pertaining to boat operations are being conducted. When practicable, the dockside or trailered instructions should be followed by related underway exercises.

**Standards**

The trainee must, without error, accomplish the task without prompting or use of a reference.

Performance Criteria	Completed (Initials)
1. Locate and state the purpose of the following equipment and fittings: <ol style="list-style-type: none"> <li>a. Forward:               <ol style="list-style-type: none"> <li>(1) Bilge access plate.</li> <li>(2) Forward drain plug.</li> <li>(3) 50 cal mount.</li> <li>(4) Forward lift rings.</li> <li>(5) Forward mount access for canopy.</li> <li>(6) Bow cleat.</li> <li>(7) Forward cleats.</li> <li>(8) Anchor locker watertight hatch.</li> <li>(9) Bow lights.</li> <li>(10) Compass sending unit.</li> </ol> </li> </ol>	_____
<ol style="list-style-type: none"> <li>b. Console:               <ol style="list-style-type: none"> <li>(1) GPS.</li> <li>(2) External VHF speaker.</li> <li>(3) Compass.</li> <li>(4) PRC117 radio.</li> <li>(5) Depth finder.</li> <li>(6) Dash instruments.</li> <li>(7) Radar.</li> <li>(8) VHF radio.</li> <li>(9) Antenna selector knob.</li> <li>(10) PRC117 headset outlet.</li> <li>(11) Battery switches.</li> <li>(12) Main circuit breakers.</li> <li>(13) 12-volt accessories switch panel.</li> <li>(14) Start/Stop switches.</li> <li>(15) Kill switch.</li> <li>(16) Battery parallel switch.</li> <li>(17) Loudhailer.</li> <li>(18) Spotlight.</li> <li>(19) Spotlight outlet.</li> </ol> </li> </ol>	_____
<ol style="list-style-type: none"> <li>c. Aft:               <ol style="list-style-type: none"> <li>(1) Spotlight outlet.</li> <li>(2) Rear canopy mounts.</li> <li>(3) Aft bilge access plates.</li> <li>(4) Fuel tank access plates.</li> </ol> </li> </ol>	_____

Performance Criteria	Completed (Initials)
(5) Fuel fill. (6) Fuel tank manual float gauge. (7) Taft rail. (8) Aft tow bitt. (9) PRC antenna high. (10) PRC antenna low. (11) VHF antenna. (12) Radar transceiver. (13) Mast lights. (14) Radar arch. (15) Deck plate lifting eyes. (16) Aft lifting rings.	

**Instructor** \_\_\_\_\_ **Date** \_\_\_\_\_

**Comments** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**TASK ENG-07-04-TPSB****Energize the Electrical and Electronic Systems on the TPSB****References**


- a. *Boston Whaler Manual*
- b. Applicable Technical Manuals

**Conditions**

This task shall be performed on a TPSB when making preparations for getting underway, under direct supervision of the Engineer, or while normal unit training and lecture programs pertaining to boat operations are being conducted. All power switches must be in the *off* position, both at the power panels and on the equipment, before energizing the main breaker.

**Standards**

The trainee must properly complete all steps below in order to successfully complete this task:

Performance Criteria	Completed (Initials)
1. State the purpose of the TPSB stators and explain how the charging system works.	_____
2. Describe the functions of the three electrical systems on the TPSB: <ol style="list-style-type: none"> <li>a. Port engine battery switch services the port engine and ships service loads.</li> <li>b. AUX battery switch services power for electronics and communications equipment.</li> <li>c. Starboard engine battery switch services the starboard engine and the electric bilge pumps.</li> </ol>	_____
3. State the purpose of the battery parallel system onboard the TPSB. In the event the engine fails to start due to insufficient charge of the batteries, the parallel system will allow the available power from both batteries to be used for engine starting.	_____
<b>NOTE</b>  Never turn the battery switches to the <i>off</i> position when the engine is running. Serious damage to the engines electrical system may result. When using emergency battery parallel switch, release the switch once the engine has started or if the engine starter is not cranking. The parallel solenoid is designed for momentary use only and will be damaged if used continuously.	
4. Energize the following power switches on the 12-volt circuit breaker panel: <ol style="list-style-type: none"> <li>a. Console power (battery switches).</li> <li>b. Main circuit breaker.</li> <li>c. VHF radio.</li> <li>d. PRC117 radio.</li> <li>e. Radar.</li> <li>f. Navigation lights.</li> <li>g. Blue lights.</li> <li>h. Fathometer.</li> </ol>	_____
5. Turn <i>on</i> the power switches at the individual electrical and electronic units, and check for proper operation.	_____

**Instructor****Date****Comments**

**TASK ENG-07-05-TPSB****Start the TPSB****References**

- a. *Boston Whaler Manual*
- b. Applicable Technical Manuals

**Conditions**

This task shall be performed on a TPSB when making preparations for getting underway, under direct supervision of the Engineer, or while normal unit training and lecture programs pertaining to boat operations are being conducted.

**Standards**

The trainee must complete task ENG-07-04-TPSB prior to commencing this task. While the engines are warming up, a check for the correct water temperature, water discharge and any other abnormal condition must be accomplished by the trainee.

The gauges should read as follows:

GAUGEAT IDLE

TACHOMETERS


650-800 RPM

WATER TEMPERATURE

180-190 °F

WATER PRESSURE

3-5 PSI

Performance Criteria	Completed (Initials)
1. Conduct a pre-start check-off in accordance with task ENG-07-01-TPSB.	_____
2. Ensure the throttles are in <i>neutral</i> position.	_____
3. Turn the battery switches <i>on</i> .	_____
<b>NOTE</b>  Main breakers for the engines must be pressed in.	
4. Squeeze the primer bulbs until they become firm.	_____
5. Depress the starter button and hold until engine starts. Repeat steps 4 and 5 for the other engine. If an engine will not start within 15 seconds, let it stand for 30 seconds and repeat the procedure.	_____

**Instructor****Date****Comments**

**TASK ENG-07-06-TPSB****Secure the TPSB****References**

- a. *Boston Whaler Manual*
- b. Applicable Technical Manuals

**Conditions**

This task shall be performed at any time on a TPSB, under direct supervision of the Engineer, or while normal unit training and lecture programs pertaining to boat operations are being conducted. The trainee will be assigned as Engineer.

**Standards**

The trainee must, without error, accomplish the task without prompting or use of a reference. All power switches must be in the *off* position at both the power panel and on the individual electrical and electronic unit before de-energizing the battery switches. The following checks must be accomplished:

- Fuel tanks topped off.
- Oil levels checked.
- Bilge pumped.
- Visual check of all items subjected to wear.
- Visual check of the propellers and skegs.

Performance Criteria	Completed (Initials)
1. Moored to a dock or pier: <ol style="list-style-type: none"> <li>a. Place all power switches in the <i>off</i> position at the electronic/electrical unit.</li> <li>b. Shut down the engines.</li> <li>c. Trim up outboards.</li> <li>d. Secure the battery switches.</li> <li>e. Secure the main 12-volt breaker.</li> <li>f. Switch bilge pumps to AUTO.</li> <li>g. Top off oil level.</li> <li>h. Visual inspection of the propellers and skegs.</li> <li>i. Stow all gear.</li> <li>j. Rinse down boat.</li> </ol>	_____
2. TPSB loaded on a trailer: <ol style="list-style-type: none"> <li>a. Flush motors.</li> <li>b. Shut down the engines.</li> <li>c. Trim down outboards.</li> <li>d. Secure the battery switches.</li> <li>e. Secure main 12-volt breaker.</li> <li>f. Switch bilge pumps to AUTO.</li> <li>g. Top off oil level.</li> <li>h. Visual inspection of propellers and skegs.</li> <li>i. Stow all gear.</li> <li>j. Wash down boat.</li> <li>k. Rinse trailer.</li> <li>l. Flush brakes.</li> <li>m. Cover console.</li> </ol>	_____

<b>Instructor</b>	_____	<b>Date</b>	_____
<b>Comments</b>	_____ _____ _____		

**TASK ENG-07-07-TPSB****State the Equipment Casualties That Will Prevent the TPSB from Getting Underway****References**

- a. *Boston Whaler Manual*
- b. Unit Standing Orders

**Conditions**

This task will be performed at any time during normal unit training and lecture programs pertaining to boat operations are being conducted. Where practicable, classroom instruction should be followed by related underway exercises.

**Standards**

With reference material and without error, the trainee must state the equipment that, should a casualty or discrepancy occur, will prevent the TPSB from getting underway for an operational mission.

Performance Criteria	Completed (Initials)
1. State the equipment that, should a casualty occur, will prevent a TPSB from getting underway on an operational mission: <ul style="list-style-type: none"> <li>a. Radar.</li> <li>b. Engine.</li> <li>c. Steering system.</li> <li>d. VHF-FM radio.</li> <li>e. Depth finder.</li> <li>f. Compass.</li> <li>g. GPS.</li> </ul>	_____

**Instructor****Date****Comments**

**TASK ENG-07-08-TPSB**

**Take Corrective Action for Engine High Water Temperature**

**References**

- a. Applicable Technical Manuals

**Conditions**

This task will be performed on a TPSB while underway during daylight hours in calm or moderate weather conditions. The instructor will simulate the casualty by providing the trainee with the casualty symptoms. The trainee will be assigned as Engineer.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. State the normal operating temperature range.	_____
2. Identify the symptoms of engine high water temperature.	_____
3. State the corrective action to be taken for engine high water temperature: <ul style="list-style-type: none"> <li>a. Check system.</li> <li>b. Note water pressure and engine RPMs.</li> <li>c. Place throttles in <i>neutral</i>. Idle for approximately 1 to 2 minutes.</li> <li>d. Check for water discharge.</li> <li>e. Secure and trim up affected motor. Inspect seawater suction for debris.</li> <li>f. Trim down motor, start up, and check discharge.</li> </ul>	_____
4. State the procedures for preventing the engine from seizing.	_____

**Instructor**

**Date**

**Comments**

**TASK ENG-07-09-TPSB****Take Corrective Action for Engine Oil Failure****References**

- a. Applicable Technical Manuals

**Conditions**

This task will be performed on a TPSB while underway during daylight hours in calm or moderate weather conditions. The instructor will simulate the casualty by providing the trainee with the casualty symptoms. The trainee will be assigned as Engineer.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Identify the symptoms for engine oil failure: a. System check. b. S.L.O.W.	_____
2. Note engine RPMs.	_____
3. Bring throttles to <i>neutral/idle</i> .	_____
4. Secure engine.	_____
5. Check oil levels.	_____
6. Inspect oil distribution manifold and oil lines along with connections around VRO pump.	_____
7. Prime oil system using priming bulb.	_____
8. Check water around lower unit for oil sheen or visual oil leaks.	_____
9. Restart engine.	_____

**Instructor****Date****Comments**

**TASK ENG-07-10-TPSB      Take Corrective Action for Outboard Motor Vibration or Spun Propeller**

**References**

a.    Applicable Technical Manuals

**Conditions**

This task will be performed on a TPSB while underway during daylight hours in calm or moderate weather conditions. The instructor will simulate the casualty by providing the trainee with the casualty symptoms. The trainee will be assigned as Engineer.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1.    Note engine RPMs.	_____
2.    Bring throttles to <i>neutral</i> and note vibration.	_____
3.    Secure the engine.	_____
4.    Trim up outboard. Inspect propeller and lower unit condition.	_____
5.    Trim down outboard and restart. Note vibration.	_____

**Instructor**

**Date**

**Comments**

**TASK ENG-07-11-TPSB****Take Corrective Action for an Engine Failing to Start with the Starter Turning Over****References**

- a. Applicable Technical Manuals

**Conditions**

This task will be performed on a TPSB while making preparations for getting underway during daylight hours in calm or moderate weather conditions. The instructor will simulate the casualty by providing the trainee with the casualty symptoms. The trainee will be assigned as Engineer.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Check kill switch lanyard.	_____
2. Inspect fuel hoses.	_____
3. Inspect fuel filter and housing.	_____
4. Check engine main circuit breaker.	_____
5. Check fuel system priming bulbs.	_____

**Instructor****Date****Comments**

**TASK ENG-07-12-TPSB      Take Corrective Action for an Engine That Will Not Turn Over When the Starter Button is Pushed**

**References**      a.    Applicable Technical Manuals

**Conditions**      This task will be performed on a TPSB while making preparations for getting underway during daylight hours in calm or moderate weather conditions. The instructor will simulate the casualty by providing the trainee with the casualty symptoms. The trainee will be assigned as Engineer.

**Standards**      The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1.    Ensure engine is in <i>neutral</i> .	_____
2.    Check engine starter circuit breaker.	_____
3.    Check engine voltmeter.	_____

**Instructor** \_\_\_\_\_ **Date** \_\_\_\_\_

**Comments** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**TASK ENG-07-13-TPSB****Take Corrective Action for Outboard Failing to Engage Forward or Reverse****References**

- a. Applicable Technical Manuals

**Conditions**

This task will be performed on a TPSB both dockside and while underway during daylight hours in calm or moderate weather conditions. The instructor will simulate the casualty by providing the trainee with the casualty symptoms. The trainee will be assigned as Engineer.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Check if propeller is spinning.	_____
2. Check shift linkage at the console.	_____
3. Check shift linkage at the engine.	_____

**Instructor****Date****Comments**

**TASK ENG-07-14-TPSB**

**Fire Onboard**

**References**

- a. *Boat Crew Seamanship Manual*, COMDTINST M16114.5 (series)
- b. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed on a TPSB dockside during daylight hours in calm or moderate weather conditions. Where practicable, the dockside training should be followed up by underway exercises. The instructor will simulate the casualty by providing the trainee with the casualty symptoms. The trainee will be assigned as Engineer.

**Standards**

The trainee will demonstrate the proper methods of controlling and extinguishing a fire onboard without prompting or use of a reference following the steps listed below:

Performance Criteria	Completed (Initials)
1. If underway, ensure throttles brought to <i>neutral</i> on both engines, then secured.	_____
2. Notify unit of situation, (if possible).	_____
3. Secure electrical power, (if situation warrants).	_____
4. Use fire extinguishers and any other means available to extinguish fire.	_____

**Instructor**

**Date**

**Comments**

**TASK ENG-07-15-TPSB****Collision with a Submerged Object****References**

- a. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)

**Conditions**

This task will be performed on a TPSB both dockside and while underway during daylight hours in calm or moderate weather conditions. The instructor will simulate the casualty by providing the trainee with the casualty symptoms. The trainee will be assigned as Engineer.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Bring throttles on both engines to <i>neutral</i> .	_____
2. Notify the crew.	_____
3. Check compartments and bilges for flooding.	_____
4. Take appropriate action to reduce flooding, if necessary.	_____
5. Raise the outboards, check the lower units, skegs and propellers.	_____
6. Notify unit of situation.	_____
7. Upon returning to station, check hull for damage.	_____

**Instructor****Date****Comments**

**TASK ENG-07-16-TPSB**

**Draw the TPSB Systems**

**References**

a. *Evinrude Service Manual*

**Conditions**

This task shall be performed at any time dockside or in a classroom. The trainee shall accomplish the task without prompting or use of a reference.

**Standards**

The trainee must correctly draw the systems listed below:

Performance Criteria	Completed (Initials)
1. Draw the following systems: a. Fuel system. b. Raw water cooling system. c. Oil system. d. Electrical charging system.	_____

**Instructor**

**Date**

**Comments**



## Section H. Non-Standard Boat

### Introduction

The following are objectives of Division Eight:

- **Demonstrate** knowledge of the engineering plant of a non-standard boat.
- **Demonstrate** the ability to perform Engineering Casualty Control on a non-standard boat.
- **Demonstrate** knowledge of the casualties and discrepancies that would prevent a non-standard boat from getting underway or otherwise restrict its use.

### NOTE

Completion of these tasks is required for any coxswain or crew member on boats that are not required to have a certified engineer aboard.

### In this section

This section contains the following tasks:

Task Number	Task	See Page
ENG-08-01-NSB	Locate Components and Accessories for the NSB Propulsion and Associated Systems	2-159
ENG-08-02-NSB	Locate Installed Equipment and Fittings on the NSB	2-161
ENG-08-03-NSB	List the Disabling Casualties and Restrictive Discrepancies that Prevent the NSB from Getting Underway	2-162
ENG-08-04-NSB	Conduct a Pre-Start Check-Off on the NSB	2-163
ENG-08-05-NSB	Start the NSB	2-164
ENG-08-06-NSB	Secure the NSB After Operations	2-165
ENG-08-07-NSB	Engine will not Turn Over or Start	2-166
ENG-08-08-NSB	Engine Running Uneven or Stalls	2-167
ENG-08-09-NSB	Basic Casualty Response	2-168
ENG-08-10-NSB	Draw the NSB Systems	2-170



**TASK ENG-08-01-NSB**

**Locate Components and Accessories of the NSB Propulsion and Associated Systems**

**References**

- a. Applicable Technical Manuals
- b. NSB Manufacturer Manuals
- c. *NSB Operator's Handbook*

**Conditions**

This task will be performed when the boat is in the trailer, in the cradle or moored. The task will be performed during normal unit training and lecture programs pertaining to boat operations. Where practicable, the instructions should be followed by related underway exercises.

**Standards**

The trainee, while aboard a NSB without reference material, must locate components and accessories of the propulsion system (those applicable to the specific NSB model) as listed below:

Performance Criteria	Completed (Initials)
1. Locate the main engine (outboards) and state the following: <ol style="list-style-type: none"> <li>a. Make and model.</li> <li>b. Horsepower of the engine.</li> <li>c. Oil capacity and type of oil used in the main engines.</li> <li>d. For outboards describe the oil system used including location and capacity of tank as appropriate.</li> </ol>	_____
2. Locate the engine stop handle or kill switch, and describe its function.	_____
3. State maximum engine RPMs, normal <i>cruising</i> RPMs, and <i>idle</i> RPMs. Relate each setting to expected speed (based on established speed curve or measurement device).	_____
4. Locate the following gauges for each engine and state their proper readings at <i>idle</i> and <i>cruising</i> speeds: <ol style="list-style-type: none"> <li>a. Coolant temperature.</li> <li>b. Lube oil pressure.</li> <li>c. Marine gear oil pressure.</li> </ol>	_____
5. Describe the fuel system: <ol style="list-style-type: none"> <li>a. State the location and capacity of the fuel tank and why the tank is not filled to 100 percent capacity.</li> <li>b. State the usable capacity of the tank.</li> <li>c. State the type of fuel used.</li> <li>d. Locate the fill pipe and sounding rod.</li> <li>e. Locate the fuel filters and priming pump.</li> <li>f. Locate the fuel return check valve.</li> <li>g. Compare engine RPMs to fuel consumption and expected endurance (fuel consumption graph).</li> </ol>	_____
6. Describe the engine cooling system: <ol style="list-style-type: none"> <li>a. State the type of system used.</li> <li>b. Locate the seachest or raw water intake.</li> <li>c. Locate the sea suction valve and strainer.</li> <li>d. Locate the raw water pump.</li> <li>e. Locate the heat exchanger.</li> <li>f. State how the heat exchanger element is protected from corrosion.</li> <li>g. State the jacket water capacity of the engine.</li> <li>h. Locate the jacket water pump, oil cooler and thermostat.</li> <li>i. State how the engine and marine gear are cooled.</li> </ol>	_____



Performance Criteria	Completed (Initials)
7. Describe the engine electrical charging system: <ul style="list-style-type: none"> <li>a. Locate the batteries.</li> <li>b. Locate the BATTERY CUTOFF switch.</li> <li>c. Locate the charging circuit components and state the function of each.</li> <li>d. Locate the main 12-volt distribution panel and associated breakers, terminals or switches.</li> </ul>	_____
8. Describe the engine alarm system: <ul style="list-style-type: none"> <li>a. State the purpose of the engine alarm system and at what temperature or pressure the alarm(s) is/are activated.</li> <li>b. State the purpose of the ALARM CUTOFF switch.</li> </ul>	_____
9. Locate the marine gear and state the following: <ul style="list-style-type: none"> <li>a. Make and model.</li> <li>b. Oil capacity and type of oil used in the marine gear.</li> <li>c. Gear ratio in <i>forward</i> and <i>reverse</i>.</li> </ul>	_____
10. Describe the boat's propeller and state the following: <ul style="list-style-type: none"> <li>a. Diameter and pitch.</li> <li>b. Number of blades.</li> </ul>	_____
11. If installed, locate the main engine jacket water heaters and state the following: <ul style="list-style-type: none"> <li>a. The purpose of the heater.</li> <li>b. Operating temperature range of the system.</li> <li>c. The location of the switch for the main engine jacket water heater.</li> </ul>	_____
12. Describe the boat's steering system: <ul style="list-style-type: none"> <li>a. State type of system.</li> <li>b. Locate the steering system components and describe the function of each (helm, pump, servo, ram, tiller, reservoir, cables).</li> <li>c. State how to fill and purge system.</li> <li>d. State type of oil used.</li> <li>e. State capacity of system.</li> <li>f. State operating pressure.</li> </ul>	_____
13. Locate and describe the components of the fixed bilge dewatering system.	_____

**Instructor** \_\_\_\_\_ **Date** \_\_\_\_\_

**Comments** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**TASK ENG-08-02-NSB**

**Locate Installed Equipment and Fittings on the NSB**

**References**

- a. Applicable Technical Manuals
- b. NSB Manufacturer Manuals
- c. *NSB Operator's Handbook*

**Conditions**

This task will be performed when the boat is in the trailer, in the cradle or moored. The task will be performed during normal unit training and lecture programs pertaining to boat operations.

**Standards**

The trainee, while aboard a NSB without reference material, must locate and describe the operation or purpose of each installed piece of equipment and fittings (those applicable to the specific NSB model) as listed below:

Performance Criteria	Completed (Initials)
1. Locate and state the purpose of the following: <ul style="list-style-type: none"> <li>a. Deck fittings (cleats, chocks, bitts).</li> <li>b. Anchor and anchor rope components.</li> <li>c. Mooring and towing gear.</li> <li>d. Navigation lights.</li> <li>e. Spot light and/or blue light.</li> <li>f. Hoisting, trailer, or tie-down points.</li> </ul>	_____
2. Locate and describe the functions of the following: <ul style="list-style-type: none"> <li>a. Compass.</li> <li>b. Radio.</li> <li>c. Fathometer.</li> <li>d. GPS/DGPS.</li> <li>e. Radar.</li> <li>f. Loudhailer.</li> </ul>	_____

**Instructor**

**Date**

**Comments**

**TASK ENG-08-03-NSB****List the Disabling Casualties and Restrictive Discrepancies that Prevent the NSB from Getting Underway****References**

- a. *Coast Guard Boat Readiness and Standardization Program Manual*, COMDTINST M16114.24 (series)
- b. *NSB Operator's Handbook*
- c. Unit Instructions or Policy

**Conditions**

This task will be performed pierside while normal unit training and lecture programs pertaining to small boat operations are being conducted. Where practicable, the pierside instructions should be followed by related underway exercises.

**Standards**

With reference material and without error, the trainee must state the equipment that, should a casualty or discrepancy occur, will prevent the NSB from getting underway for an operational mission. The trainee must know the difference between disabling casualties and mission critical casualties. The trainee must know what steps must be followed when a casualty or discrepancy is found.

Performance Criteria	Completed (Initials)
1. State the equipment problems or symptoms that would constitute disabling casualties for the NSB. Each of these would "make the boat not serviceable" as defined in the <i>Coast Guard Boat Readiness and Standardization Program Manual</i> , COMDTINST M16114.24 (series), <i>Chapter 4</i> . Describe the actions to be taken if the disabling casualty is found while underway and at dockside.	_____
2. State the equipment problems or symptoms that would constitute restrictive discrepancies for the NSB. Each of these would "restrict the operations of the boat such that it can perform some missions, but not all missions safely" as defined in the <i>Coast Guard Boat Readiness and Standardization Program Manual</i> , COMDTINST M16114.24 (series), <i>Chapter 4</i> . Describe the actions to be taken if the restrictive discrepancy is found while underway and at dockside.	_____
3. Describe examples of problems or symptoms that would constitute major discrepancies for the NSB. These are important maintenance issues that "degrade the effectiveness of the boat to perform one or more missions" as defined in the <i>Coast Guard Boat Readiness and Standardization Program Manual</i> , COMDTINST M16114.24 (series), <i>Chapter 4</i> . These must be documented and corrected but do not otherwise restrict the boat's service or impact safety of the crew.	_____

**Instructor****Date****Comments**

**TASK ENG-08-04-NSB****Conduct a Pre-Start Check-Off on the NSB****References**

- a. Applicable Technical Manuals
- b. NSB Manufacturer Manuals
- c. *NSB Operator's Handbook*

**Conditions**

This task will be performed when the boat is trailered, in the cradle or moored. The task will be performed during normal unit training and lecture programs pertaining to boat operations. Where practicable, the instructions should be followed by related underway exercises.

**Standards**

The trainee must properly complete all steps below in order to successfully complete this task:

Performance Criteria	Completed (Initials)
1. Sound fuel tank with sounding rod. Fuel should be at or near 95 percent.	_____
2. Secure and disconnect shore power electrical cable as appropriate.	_____
3. Secure battery charger and jacket water heater.	_____
<b>CAUTION !</b> Never start or run the engines with the battery charger energized. Damage to the alternator may occur.	
4. Check compartments and deck for unsecured or loose gear.	_____
5. Check bilges for water, fuel, and oil.	_____
6. Check that bilge drain plugs are in place (transom) and overboard discharge scuppers are clear.	_____
7. Check the marine gear and engine oil levels.	_____
8. Check engine coolant level.	_____
9. Check steering fluid level.	_____
10. Visually check sea strainer for debris. Clean if necessary.	_____
11. Open sea suction valve.	_____
12. Check for proper valve alignment of fuel system.	_____
13. Check engine controls for free movement.	_____
14. Check belts for proper tension (no greater than $7/16$ inch per foot of span).	_____

**Instructor****Date****Comments**

**TASK ENG-08-05-NSB****Start the NSB****References**


- a. Applicable Technical Manuals
- b. NSB Manufacturer Manuals
- c. *NSB Operator's Handbook*

**Conditions**

This task will be performed when the boat is in the cradle or moored. The task will be performed during normal unit training and lecture programs pertaining to boat operations. Where practicable, the instructions should be followed by related underway exercises.

**Standards**

The trainee must properly complete all steps below in order to successfully complete this task:

Performance Criteria	Completed (Initials)
1. Energize the battery switches, main switch/breaker and all required switch/breakers for start.	_____
2. Ensure engine kill switches are in place and properly set.	_____
3. Ensure throttles are in the <i>neutral</i> position.	_____
4. Ensure fuel system is primed and properly aligned for start.	_____
5. Ensure outboards or outdrive units are in water and trimmed properly.	_____
6. Depress the STARTER button (or key) and hold until engine starts. Repeat for other engine. If an engine does not start within 15 seconds, let it stand for 30 seconds before further attempt, or review steps for cause.	_____
7. Check installed gauges to ensure engine and systems are within normal parameters (oil, marine gear, coolant and oil temperatures, alternator output).	_____
8. Check raw water overboard discharge.	_____
9. Energize and inspect all electrical equipment.	_____
10. Check engine for fuel oil, jacket water, exhaust, raw water, and oil leaks, or other abnormal conditions.	_____
<b>NOTE</b>  Diesel engines are best warmed up under load. When practical, get underway as soon as check-off procedures are completed.	_____
11. Check propeller shaft packing gland or other through hull fitting for leakage.	_____
12. Monitor gauges on console for correct engine operating parameters.	_____

**Instructor****Date****Comments**

**TASK ENG-08-06-NSB**

**Secure the NSB After Operations**

**References**

- a. Applicable Technical Manuals
- b. NSB Manufacturer Manuals
- c. *NSB Operator's Handbook*

**Conditions**

This task will be performed when the boat is in the cradle or moored. The task will be performed during normal unit training and lecture programs pertaining to boat operations. Where practicable, the instructions should be followed by related underway exercises.

**Standards**

The trainee must properly complete all steps below in order to successfully complete this task:

Performance Criteria	Completed (Initials)
1. Allow the engines to idle 4-5 minutes; especially if recently run at high RPM.	_____
2. Secure all electrical gear with the exception of the main switch.	_____
3. Shut down the engine. Allow associated alarm to activate, then secure alarm.	_____
4. Trim/tilt outboard engine or outdrive into storage position as appropriate.	_____
5. Secure the sea suction valves.	_____
6. Remove any water, fuel or oil from the bilge.	_____
7. Sound the fuel tanks and fill to 95 percent.	_____
8. Stow all gear; ensure boat is ready for sea.	_____
9. Connect shore power electrical cable and ensure battery charger and hot start (if installed) are energized.	_____
10. Flush engines as appropriate after installing in a trailer or securing for cradle stowage.	_____

**Instructor**

**Date**

**Comments**

**TASK ENG-08-07-NSB****Engine will not Turn Over or Start****References**

- a. Applicable Technical Manuals

**Conditions**

This task will be performed when the boat is in the cradle or underway during daylight hours. The task will be performed during normal unit training and lecture programs pertaining to boat operations. Where practicable, the instructions should be followed by related underway exercises. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Ensure kill switch or kill switch lanyard is in proper position.	_____
2. Ensure main power switch or breakers are in proper position.	_____
3. Check battery voltage.	_____
4. Check battery and starter cables for broken, loose, or corroded connections.	_____
5. Ensure throttle is in <i>neutral</i> .	_____
6. Inspect fuel system for air leaks, prime, and correct valve alignment.	_____
7. If actions above do not solve casualty, call unit for assistance.	_____

**Instructor****Date****Comments**

**TASK ENG-08-08-NSB**

**Engine Running Uneven or Stalls**

**References**

- a. Applicable Technical Manuals

**Conditions**

This task will be performed when the boat is in the cradle or underway during daylight hours. The task will be performed during normal unit training and lecture programs pertaining to boat operations. Where practicable, the instructions should be followed by related underway exercises. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Check fuel system for proper valve alignment.	_____
2. Check level of fuel tank.	_____
3. Check fuel supply lines for air leaks. Repair and bleed if necessary.	_____
4. Check fuel filter for contamination.	_____
5. Check intake air system for restrictions.	_____
6. If actions above do not solve casualty, call unit for assistance.	_____

**Instructor**

**Date**

**Comments**

**TASK ENG-08-09-NSB****Basic Casualty Response****References**

- a. Applicable Technical Manuals

**Conditions**

This task will be performed when the boat is underway during daylight hours. The task will be performed during normal unit training and lecture programs pertaining to boat operations. Where practicable, the instructions should be followed by related underway exercises. The instructor will simulate the casualty by providing the trainee with the casualty symptoms.

**Standards**

The trainee, upon being given the casualty symptoms, will perform the correct procedures, following the steps listed below:

Performance Criteria	Completed (Initials)
1. Respond to a loss of steering casualty. <ol style="list-style-type: none"> <li>Maintain heading or control with engines keeping the seas on the bow if possible.</li> <li>Inspect steering gear or system for damage or fouling.</li> <li>Demonstrate use of any emergency steering system if applicable.</li> <li>Test steering for complete range and function after repair.</li> </ol>	_____
2. Respond to striking a submerged object or temporary grounding casualty. <ol style="list-style-type: none"> <li>Maneuver to safe water.</li> <li>Inspect hull, bilges and compartments for leaks or damage.</li> <li>Test steering system for damage or restrictions.</li> <li>Test propulsion system (each engine individually) by running up slowly to check for damage or vibrations.</li> <li>Tilt each outboard or outdrive unit up and inspect lower unit and propeller for damage.</li> </ol>	_____
3. Respond to engine high water temperature (overheating) casualty. <ol style="list-style-type: none"> <li>Reduce engine RPMs and observe changes.</li> <li>Check for overboard discharge.</li> <li>Check for fouling of the cooling water intake.</li> <li>Check cooling system integrity and coolant level. Check quantity and quality of coolant.</li> </ol>	_____
4. Respond to a loss of oil pressure casualty. <ol style="list-style-type: none"> <li>Bring throttles to <i>neutral/idle</i>.</li> <li>Secure effected engine.</li> <li>Check oil level. Check quantity and quality of oil for signs of contamination (milky).</li> <li>Check water around lower unit for oil sheen or visual oil leaks.</li> <li>Check bilges for signs of oil leaks.</li> </ol>	_____
5. Respond to engine vibration, outboard motor vibration or damaged propeller. <ol style="list-style-type: none"> <li>Note engine RPM.</li> <li>Bring throttles back to <i>neutral</i> and check for vibration.</li> <li>Secure engine(s) and trim up outboard or outdrive to inspect propeller and lower unit.</li> <li>Trim down outboard or outdrive and restart.</li> <li>Check each engine individually by engaging into <i>forward</i> and <i>reverse</i> gears and bringing up RPMs slowly. Note vibration.</li> </ol>	_____
6. Respond to loss of shift control casualty (engine fails to engage in <i>forward</i> or <i>reverse</i> ). <ol style="list-style-type: none"> <li>Bring throttle controls to <i>neutral/idle</i>.</li> <li>Check if propeller is turning.</li> <li>Secure engine if necessary.</li> <li>Check shift linkage at console.</li> <li>Check shift linkage at engine.</li> </ol>	_____

Performance Criteria	Completed (Initials)
7. Respond to a fire on board. a. Unit and other vessels in vicinity notified of situation. b. Bring throttle controls to <i>neutral/idle</i> , then secure. c. Secure electrical power (if situation warrants). d. Use on board fire extinguishers and any other means available to extinguish fire. e. Consider risk versus gain of abandoning boat.	_____
8. Unit notified and kept informed during all of the above casualty response scenarios.	_____
9. Demonstrate rigging and deploying anchor as appropriate in any of the above casualty scenarios.	_____

**Instructor**

**Date**

**Comments**

**TASK ENG-08-10-NSB****Draw the NSB Systems****References**

- a. Applicable Technical Manuals
- b. NSB Manufacturer Manuals
- c. *NSB Operator's Handbook*

**Conditions**

This task will be performed pierside. Trainee must accomplish task without prompting or use of a reference.

**Standards**

The trainee must correctly trace out the following systems:

Performance Criteria	Completed (Initials)
1. Trace out and draw the following systems: <ol style="list-style-type: none"> <li>a. Fuel oil system.</li> <li>b. Raw water cooling system.</li> <li>c. Freshwater cooling system.</li> <li>d. Hydraulic or cable steering system.</li> <li>e. Electrical charging system.</li> </ol>	<hr/>

**Instructor****Date****Comments**



## Chapter 3

### Engineer Trainee Study Guide

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#### Introduction

This chapter should be removed and given to the trainee to keep. Its purpose is to provide guidance for the trainee's reading assignments and is not a part of the training record.

The trainee should read the appropriate reading assignment and answer the related questions prior to beginning training in each new task. The instructor should then discuss the trainee's answers to ensure understanding of the subject matter prior to beginning instruction for each new task.

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#### In this chapter

This chapter contains the following sections:

Section	Title	See Page
A	Reading Assignments – Division One	3-3
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## Section A. Reading Assignments - Division One

### Introduction

The reading assignment(s) should be read prior to beginning instruction of each task.

### In this section

This section contains the following reading assignments:

Task Number	Reading Assignment	See Page
ENG-01-01-41UTB	<ul style="list-style-type: none"> <li>41' UTB Operator's Handbook, COMDTINST M16114.2 (series)</li> <li>Boat Crew Seamanship Manual, COMDTINST M16114.5 (series), Chapter 8, Section D</li> </ul>	3-5
ENG-01-02-41UTB	<ul style="list-style-type: none"> <li>41' UTB Operator's Handbook, COMDTINST M16114.2 (series)</li> <li>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</li> </ul>	3-6
ENG-01-03-41UTB	<ul style="list-style-type: none"> <li>41' UTB Operator's Handbook, COMDTINST M16114.2 (series)</li> </ul>	3-6
ENG-01-04-41UTB	<ul style="list-style-type: none"> <li>41' UTB Operator's Handbook, COMDTINST M16114.2 (series)</li> </ul>	3-6
ENG-01-05-41UTB	<ul style="list-style-type: none"> <li>41' UTB Operator's Handbook, COMDTINST M16114.2 (series)</li> </ul>	3-7
ENG-01-06-41UTB	<ul style="list-style-type: none"> <li>41' UTB Operator's Handbook, COMDTINST M16114.2 (series)</li> <li>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</li> <li>Boat Crew Seamanship Manual, COMDTINST M16114.5 (series), Chapter 8, Section E</li> </ul>	3-7
ENG-01-07-41UTB	<ul style="list-style-type: none"> <li>41' UTB Operator's Handbook, COMDTINST M16114.2 (series)</li> <li>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</li> </ul>	3-7
ENG-01-08-41UTB	<ul style="list-style-type: none"> <li>41' UTB Operator's Handbook, COMDTINST M16114.2 (series)</li> <li>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</li> </ul>	3-8



Task Number	Reading Assignment	See Page
ENG-01-09-41UTB	<ul style="list-style-type: none"> <li>• <i>41' UTB Operator's Handbook</i>, COMDTINST M16114.2 (series)</li> <li>• <i>Boat Crew Seamanship Manual</i>, COMDTINST M16114.5 (series), Chapter 8, Section E</li> </ul>	3-8
ENG-01-10-41UTB	<ul style="list-style-type: none"> <li>• <i>41' UTB Operator's Handbook</i>, COMDTINST M16114.2 (series)</li> <li>• <i>Boat Crew Seamanship Manual</i>, COMDTINST M16114.5 (series), Chapter 8, Section E</li> </ul>	3-8
ENG-01-11-41UTB	<ul style="list-style-type: none"> <li>• <i>41' UTB Operator's Handbook</i>, COMDTINST M16114.2 (series)</li> <li>• <i>Coast Guard Boat Readiness and Standardization Program Manual</i>, COMDTINST M16114.24 (series)</li> </ul>	3-9
ENG-01-12-41UTB	<ul style="list-style-type: none"> <li>• <i>41' UTB Operator's Handbook</i>, COMDTINST M16114.2 (series)</li> <li>• <i>Coast Guard Boat Readiness and Standardization Program Manual</i>, COMDTINST M16114.24 (series)</li> </ul>	3-9
ENG-01-13-41UTB	<ul style="list-style-type: none"> <li>• <i>41' UTB Operator's Handbook</i>, COMDTINST M16114.2 (series)</li> <li>• <i>Boat Crew Seamanship Manual</i>, COMDTINST M16114.5 (series), Chapter 8, Section E</li> </ul>	3-9
ENG-01-14-41UTB	<ul style="list-style-type: none"> <li>• None assigned</li> </ul>	

**TASK ENG-01-01-41UTB:    Locate Components and Accessories of the UTB Propulsion System**

---

1. The main engines on the 41' UTB are twin \_\_\_\_\_ marine diesel engines.
  2. State the following specifications for the engines in the UTB:
    - a. \_\_\_\_\_ horsepower
    - b. \_\_\_\_\_ stroke
    - c. \_\_\_\_\_ cylinder
    - d. \_\_\_\_\_ cooled
    - e. \_\_\_\_\_ rotation from the front
  3. Model VT-903M represents
  
  4. Fuel oil is carried in two \_\_\_\_\_ tanks with a common center bulkhead.
  5. A \_\_\_\_\_ strainer is installed between the raw water supply line between the seachest and the main engine raw water pump.
  6. Each engine is indirectly cooled by a \_\_\_\_\_, \_\_\_\_\_ type pump.
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**TASK ENG-01-02-41UTB: List the Disabling Casualties and Restrictive Discrepancies that Prevent a UTB from Getting Underway**

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1. Disabling casualties are those which make the boat \_\_\_\_\_.
  2. If a disabling casualty is identified when the boat is moored, the boat shall not get \_\_\_\_\_ until the \_\_\_\_\_ is corrected.
  3. Disabling casualties shall be reported to the \_\_\_\_\_ by the most expedient means.
  4. List four of the disabling casualties dealing with engine parameters.
    - a.
    - b.
    - c.
    - d.
  5. List four of the restrictive discrepancies.
    - a.
    - b.
    - c.
    - d.
- 

**TASK ENG-01-03-41UTB: Conduct a Pre-Start Check-Off on a UTB**

---

1. When the engine is secured, the marine gear oil level \_\_\_\_\_ should be above the \_\_\_\_\_ mark on the dipstick.
  2. The marine gear oil level must be rechecked after the engine is \_\_\_\_\_ and \_\_\_\_\_ to confirm the correct level on the \_\_\_\_\_.
  3. Never start or \_\_\_\_\_ the engines with the \_\_\_\_\_ power energized. Damage to the \_\_\_\_\_ may occur.
- 

**TASK ENG-01-04-41UTB: Start the UTB**

---

1. Make sure the Morse controls are in \_\_\_\_\_.
  2. Do not depress both starter buttons \_\_\_\_\_. Start engines \_\_\_\_\_ at a time.
  3. With the main engines at idle, the oil levels of the marine gear should be between \_\_\_\_\_ and \_\_\_\_\_ on the dipstick.
-

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**TASK ENG-01-05-41UTB:    Secure the UTB After Operations**

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1. If the portable pump was used, \_\_\_\_\_ with unit spare while it is being cleaned and serviced. Replacement of the pump will allow the boat to remain \_\_\_\_\_ capable.
  2. If recent run at high RPMs, allow the engines to idle \_\_\_\_\_ to \_\_\_\_\_ minutes for cool-down.
  3. The engine stops remain in the \_\_\_\_\_ position at all times when the engine is secured. Failure to do so may allow fuel oil to leak through the injectors into the cylinders causing a \_\_\_\_\_ of the engine.
- 

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**TASK ENG-01-06-41UTB:    Fire in the Engine Room**

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1. The most logical and best \_\_\_\_\_ action is to remain \_\_\_\_\_ and take early \_\_\_\_\_ action when fire \_\_\_\_\_ conditions are observed.
  2. The fixed \_\_\_\_\_ fire extinguishing system has the capacity to extinguish and \_\_\_\_\_ fire provided the \_\_\_\_\_ for its use are followed carefully.
  3. If at any \_\_\_\_\_ there is doubt as to the ability to \_\_\_\_\_ and extinguish and \_\_\_\_\_ fire, or if it is determined to be \_\_\_\_\_ the capability of the portable fire extinguishers, use the \_\_\_\_\_ fire extinguishing system.
  4. The fixed Halon 1301 fire extinguishing system must be \_\_\_\_\_ operated.
  5. The fuel shutoff cylinder is \_\_\_\_\_ engaged when the Halon system is activated in the case of an engine room fire.
- 

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**TASK ENG-01-07-41UTB:    Loss of Steering**

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1. List the four likely causes of steering loss.
    - a. \_\_\_\_\_
    - b. \_\_\_\_\_
    - c. \_\_\_\_\_
    - d. \_\_\_\_\_
  2. If the helm turns \_\_\_\_\_ without any effect on the \_\_\_\_\_, suspect a broken \_\_\_\_\_, air in the system, or \_\_\_\_\_ fitting.
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**TASK ENG-01-08-41UTB: Collision with a Submerged Object/Running Aground**

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1. Excessive \_\_\_\_\_ or \_\_\_\_\_ vibration may further \_\_\_\_\_ strut or \_\_\_\_\_ tube bearings.
2. List the seven corrective actions for hitting a submerged object.
  - a.
  - b.
  - c.
  - d.
  - e.
  - f.
  - g.

---

**TASK ENG-01-09-41UTB: Reduction Gear Failure**

---

1. Using the free wheel feature, Fill the marine gear \_\_\_\_\_ with oil.
2. List the steps that need to be accomplished after you free wheel for over 8 hours of operation.
  - a.
  - b.
  - c.
3. After you engage the COME HOME device and start the engine, the propeller will \_\_\_\_\_.
4. The COME HOME device is only on the \_\_\_\_\_ engine.

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**TASK ENG-01-10-41UTB: Main Engine/Reduction Gear Failure**

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1. If the main engine is not operable, fill the marine gear \_\_\_\_\_ of oil and drain the excess until the oil level is at the \_\_\_\_\_ on the dipstick.
  2. This must be done after every \_\_\_\_\_ hours of free spinning operation.
  3. If the shaft must be locked, do not use \_\_\_\_\_ to lock the shaft.
-

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**TASK ENG-01-11-41UTB: Loss of Main Engine Lube Oil Pressure**

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1. A main engine lube oil pressure loss will \_\_\_\_\_ the \_\_\_\_\_ system and energize the \_\_\_\_\_ light located below the affected engine \_\_\_\_\_ pressure gauge.
- 

**TASK ENG-01-12-41UTB: Main Engine High Water Temperature**

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1. While the engine is secure and the \_\_\_\_\_ is in the *up* position, to prevent seizure until the engine cools, \_\_\_\_\_ the engine with the starter.
2. If main engine jacket water reaches \_\_\_\_\_, it will activate the \_\_\_\_\_ system and energize and \_\_\_\_\_ indicator light located below the affected main engine \_\_\_\_\_ gauge.
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**TASK ENG-01-13-41UTB: Shaft Stuffing Box/Packing Gland Overheating**

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1. If there is no water coming from the shaft packing gland \_\_\_\_\_ to \_\_\_\_\_ drops per and the \_\_\_\_\_ box gland is too hot to \_\_\_\_\_, immediately take the following three corrective actions:
- a.
  - b.
  - c.
2. Do not place a \_\_\_\_\_ near the turning \_\_\_\_\_ until you bring the \_\_\_\_\_ to clutch speed.
-





## Section B. Reading Assignments - Division Two

### Introduction

The reading assignment(s) should be read prior to beginning instruction of each task.

### In this section

This section contains the following reading assignments:

Task Number	Reading Assignment	See Page
ENG-02-01-47MLB	<ul style="list-style-type: none"> <li>47' MLB Operator's Handbook, COMDTINST M16114.25 (series)</li> </ul>	3-15
ENG-02-02-47MLB	<ul style="list-style-type: none"> <li>47' MLB Operator's Handbook, COMDTINST M16114.25 (series)</li> </ul>	3-15
ENG-02-03-47MLB	<ul style="list-style-type: none"> <li>47' MLB Operator's Handbook, COMDTINST M16114.25 (series)</li> </ul>	3-16
ENG-02-04-47MLB	<ul style="list-style-type: none"> <li>47' MLB Operator's Handbook, COMDTINST M16114.25 (series)</li> </ul>	3-16
ENG-02-05-47MLB	<ul style="list-style-type: none"> <li>47' MLB Operator's Handbook, COMDTINST M16114.25 (series)</li> </ul>	3-17
ENG-02-06-47MLB	<ul style="list-style-type: none"> <li>47' MLB Operator's Handbook, COMDTINST M16114.25 (series)</li> <li>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</li> </ul>	3-17
ENG-02-07-47MLB	<ul style="list-style-type: none"> <li>47' MLB Operator's Handbook, COMDTINST M16114.25 (series)</li> </ul>	3-18
ENG-02-08-47MLB	<ul style="list-style-type: none"> <li>47' MLB Operator's Handbook, COMDTINST M16114.25 (series)</li> </ul>	3-18
ENG-02-09-47MLB	<ul style="list-style-type: none"> <li>47' MLB Operator's Handbook, COMDTINST M16114.25 (series)</li> </ul>	3-18
ENG-02-10-47MLB	<ul style="list-style-type: none"> <li>47' MLB Operator's Handbook, COMDTINST M16114.25 (series)</li> <li>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</li> </ul>	3-19



Task Number	Reading Assignment	See Page
ENG-02-11-47MLB	<ul style="list-style-type: none"> <li>• <i>47' MLB Operator's Handbook</i>, COMDTINST M16114.25 (series)</li> <li>• <i>Coast Guard Boat Readiness and Standardization Program Manual</i>, COMDTINST M16114.24 (series)</li> </ul>	3-19
ENG-02-12-47MLB	<ul style="list-style-type: none"> <li>• <i>47' MLB Operator's Handbook</i>, COMDTINST M16114.25 (series)</li> <li>• <i>Coast Guard Boat Readiness and Standardization Program Manual</i>, COMDTINST M16114.24 (series)</li> </ul>	3-19
ENG-02-13-47MLB	<ul style="list-style-type: none"> <li>• <i>47' MLB Operator's Handbook</i>, COMDTINST M16114.25 (series)</li> <li>• <i>Coast Guard Boat Readiness and Standardization Program Manual</i>, COMDTINST M16114.24 (series)</li> </ul>	3-19
ENG-02-14-47MLB	<ul style="list-style-type: none"> <li>• <i>47' MLB Operator's Handbook</i>, COMDTINST M16114.25 (series)</li> <li>• <i>Coast Guard Boat Readiness and Standardization Program Manual</i>, COMDTINST M16114.24 (series)</li> </ul>	3-20
ENG-02-15-47MLB	<ul style="list-style-type: none"> <li>• <i>47' MLB Operator's Handbook</i>, COMDTINST M16114.25 (series)</li> <li>• <i>Coast Guard Boat Readiness and Standardization Program Manual</i>, COMDTINST M16114.24 (series)</li> </ul>	3-20
ENG-02-16-47MLB	<ul style="list-style-type: none"> <li>• <i>47' MLB Operator's Handbook</i>, COMDTINST M16114.25 (series)</li> <li>• <i>Coast Guard Boat Readiness and Standardization Program Manual</i>, COMDTINST M16114.24 (series)</li> </ul>	3-20
ENG-02-17-47MLB	<ul style="list-style-type: none"> <li>• <i>47' MLB Operator's Handbook</i>, COMDTINST M16114.25 (series)</li> <li>• <i>Coast Guard Boat Readiness and Standardization Program Manual</i>, COMDTINST M16114.24 (series)</li> </ul>	3-20
ENG-02-18-47MLB	<ul style="list-style-type: none"> <li>• <i>47' MLB Operator's Handbook</i>, COMDTINST M16114.25 (series)</li> <li>• <i>Coast Guard Boat Readiness and Standardization Program Manual</i>, COMDTINST M16114.24 (series)</li> </ul>	3-21



Task Number	Reading Assignment	See Page
ENG-02-19-47MLB	<ul style="list-style-type: none"> <li>• <i>47' MLB Operator's Handbook</i>, COMDTINST M16114.25 (series)</li> <li>• <i>Coast Guard Boat Readiness and Standardization Program Manual</i>, COMDTINST M16114.24 (series)</li> </ul>	3-21
ENG-02-20-47MLB	<ul style="list-style-type: none"> <li>• <i>47' MLB Operator's Handbook</i>, COMDTINST M16114.25 (series)</li> <li>• <i>Coast Guard Boat Readiness and Standardization Program Manual</i>, COMDTINST M16114.24 (series)</li> </ul>	3-21
ENG-02-21-47MLB	<ul style="list-style-type: none"> <li>• <i>47' MLB Operator's Handbook</i>, COMDTINST M16114.25 (series)</li> <li>• <i>Coast Guard Boat Readiness and Standardization Program Manual</i>, COMDTINST M16114.24 (series)</li> </ul>	3-21
ENG-02-22-47MLB	<ul style="list-style-type: none"> <li>• None assigned</li> </ul>	



## Chapter 3 – Engineer Trainee Study Guide

**TASK ENG-02-01-47MLB:    Locate Components and Accessories of the 47' MLB Propulsion System**

- 
1. The major components of the propulsion system are the \_\_\_\_\_ main engines mounted in the engine room, the \_\_\_\_\_ that pass through bulkhead \_\_\_\_\_ and couple the engines to the \_\_\_\_\_ gears, the \_\_\_\_\_ configured for \_\_\_\_\_ drive mounted in the survivor's compartment and the propellers and shafts.
  2. The reduction ratio is \_\_\_\_\_ in *forward* and \_\_\_\_\_.
  3. A temperature regulating valve and gear oil cooler maintain oil temperatures between \_\_\_\_\_ - \_\_\_\_\_ °F.
  4. Normal clutch-apply pressure is \_\_\_\_\_ to \_\_\_\_\_ PSI.
- 

**TASK ENG-02-02-47MLB:    Locate Components and Accessories of the 47' MLB Auxiliary System**

- 
1. A \_\_\_\_\_ GPM electric \_\_\_\_\_ pump is at frame \_\_\_\_\_ to starboard of the keel.
  2. A 24-volt \_\_\_\_\_ is on bulkhead \_\_\_\_\_ to port of the \_\_\_\_\_.
  3. The \_\_\_\_\_-volt power panel is on bulkhead \_\_\_\_\_ to \_\_\_\_\_ of isolation \_\_\_\_\_.
  4. The CO<sub>2</sub> fire suppression system includes \_\_\_\_\_ storage bottles that are located on bulkhead \_\_\_\_\_ to \_\_\_\_\_ of the forward compartment \_\_\_\_\_.
-



---

### **TASK ENG-02-03-47MLB:    Locate Components and Accessories of the 47' MLB Electrical System**

---

1. AC Power is provided from two separate sources. Name and explain each.
  - a.
  - b.
2. DC Power is supplied to the 47' MLB by \_\_\_\_\_ engine-driven, \_\_\_\_\_ - \_\_\_\_\_ alternators and two banks of \_\_\_\_\_ - \_\_\_\_\_ batteries. The power is distributed through \_\_\_\_\_ -volt DC and \_\_\_\_\_ -volt DC power panels mounted in the \_\_\_\_\_ machinery space.
3. Name the three power panels installed in the auxiliary machinery space.
  - a.
  - b.
  - c.
4. Why is it necessary to secure the service batteries, when securing the start system cutout switch or when removing power cables from the starter?

---

### **TASK ENG-02-04-47MLB:    Locate Installed Equipment and Fittings on the 47' MLB**

---

1. The installed bilge pump system is an \_\_\_\_\_ system only.
  2. It will require approximately \_\_\_\_\_ of water in a bilge space to activate the bilge pumps when set in the \_\_\_\_\_ mode.
  3. The 47' MLB is out fitted with \_\_\_\_\_ bilge flooding alarm sensors located near each \_\_\_\_\_ GPM submersible bilge pumps.
  4. The CO<sub>2</sub> system can be activated from four locations on the 47' MLB.
  5. How is the emergency window release system re-armed?
  6. The HVAC system is cooled by a \_\_\_\_\_.
  7. The 47' MLB uses a \_\_\_\_\_ steering system that interacts with a \_\_\_\_\_ system.
-

---

**TASK ENG-02-05-47MLB: Set Watertight Integrity Aboard the 47' MLB**

---

1. How many watertight compartments are aboard a 47' MLB?
  2. Name them:
  3. The following are secondary watertight compartments which aid in self-righting the craft in event of a capsized:
    - a.
    - b.
    - c.
    - d.
- 

**TASK ENG-02-06-47MLB: List the Disabling Casualties and Restrictive Discrepancies that Prevent the 47' MLB from Getting Underway**

---

1. Disabling casualties are those which make the boat \_\_\_\_\_.
  2. The Operational Commander will be notified of a disabling casualty, no later than \_\_\_\_\_ hours after the casualty is discovered.
  3. What must be sent within 24 hours of the casualty, if the casualties cannot be repaired within 48 hours?
  4. List two disabling casualties concerning engine parameters.
  5. List at least six disabling casualties concerning engineering system components:
  6. List at least six restrictive discrepancies.
-



---

**TASK ENG-02-07-47MLB: Conduct a Pre-Start Check-Off on the 47' MLB**

---

1. Ensure fuel oil is maintained at \_\_\_\_\_ percent (\_\_\_\_\_ gallons).
2. Check the following fluid levels:
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
3. Secure dockside \_\_\_\_\_ and disconnect \_\_\_\_\_ - \_\_\_\_\_ from the boat. Secure all breakers in the \_\_\_\_\_-volt \_\_\_\_\_ power panel.
4. Ensure the main breaker and the following breakers on the 24-volt DC power panel are on: (list all seventeen)

---

**TASK ENG-02-08-47MLB: Start the 47' MLB**

---

1. Set throttle levers to \_\_\_\_\_ position at all \_\_\_\_\_ stations.
  2. The engine will idle at \_\_\_\_\_ RPM until the oil temperature reaches \_\_\_\_\_ degrees.
  3. Ensure \_\_\_\_\_ through the engines by observing overboard \_\_\_\_\_.
  4. If proper oil pressure is not evident, \_\_\_\_\_ and investigate.
- 

---

**TASK ENG-02-09-47MLB: Secure a 47' MLB After Operations**

---

1. Secure engines using push buttons in the \_\_\_\_\_.
  2. Secure all electronic equipment breakers in the \_\_\_\_\_-volt power panel \_\_\_\_\_ machinery space.
  3. It may be necessary to wait \_\_\_\_\_ minutes to obtain an accurate reading on engine lube oil levels.
-

---

**TASK ENG-02-10-47MLB: Capsizing**

---

1. The average time under water will be approximately \_\_\_\_\_ to \_\_\_\_\_ seconds.
  2. Once dewatering is complete, check the \_\_\_\_\_ in both main engines.
  3. Do not hook up the \_\_\_\_\_. Electronic equipment in all below deck spaces may be soaked with \_\_\_\_\_ and \_\_\_\_\_.
- 

---

**TASK ENG-02-11-47MLB: Striking a Submerged Object**

---

1. The engineer and crewman should proceed to the \_\_\_\_\_ to check shafting for \_\_\_\_\_ and \_\_\_\_\_.
  2. The engineer should check the \_\_\_\_\_ and \_\_\_\_\_ for damage.
- 

---

**TASK ENG-02-12-47MLB: Steering Casualty**

---

1. If the steering gear low pressure light is energized, \_\_\_\_\_ both engines.
  2. Manual system gauge should read \_\_\_\_\_ - \_\_\_\_\_ PSI.
  3. Power system gauge should read \_\_\_\_\_ - \_\_\_\_\_ PSI.
  4. Reservoir level should be \_\_\_\_\_ - \_\_\_\_\_ full.
- 

---

**TASK ENG-02-13-47MLB: Reduction Gear Failure**

---

1. Both the \_\_\_\_\_ and the \_\_\_\_\_ are activated from the \_\_\_\_\_ stations.
  2. The engineer should proceed to the \_\_\_\_\_ space and check both \_\_\_\_\_ modules breakers on the \_\_\_\_\_-volt power panel to ensure the breakers have not tripped.
  3. When the clutch is engaged, the clutch apply pressure should be \_\_\_\_\_ - \_\_\_\_\_ PSI.
  4. What action bypasses all throttle sensors?
-



---

**TASK ENG-02-14-47MLB: Fire in the Engine Room**

---

1. The engine room has a fire alarm system that sounds when the temperature in the engine room exceeds \_\_\_\_\_ degrees.
  2. State how the engineer energizes the CO<sub>2</sub> System.
  3. There is a \_\_\_\_\_ second delay built into the CO<sub>2</sub> System.
  4. True or False - The delay on the CO<sub>2</sub> System cannot be manually overridden.
- 

---

**TASK ENG-02-15-47MLB: Fire in the Auxiliary Machinery Space**

---

1. True or False - There are no fire or smoke detectors in the auxiliary machinery space.
  2. The engineer should proceed to the survivor's compartment and secure the \_\_\_\_\_ on the \_\_\_\_\_ bulkhead.
- 

---

**TASK ENG-02-16-47MLB: Loss of Control of Engine RPMs**

---

1. Bring the engine back to \_\_\_\_\_.
  2. If the engine fails to secure, the engineer should proceed to the \_\_\_\_\_ and pull the fuel \_\_\_\_\_ for the affected and allow the engine to \_\_\_\_\_.
  3. DO NOT use the \_\_\_\_\_ system to secure the engine.
- 

---

**TASK ENG-02-17-47MLB: Loss of Fuel Oil Pressure**

---

1. The \_\_\_\_\_ alarm will sound and flash a \_\_\_\_\_ (Fuel Oil Pressure Low) warning.
  2. The engineer should proceed to the \_\_\_\_\_, look through the port light in the \_\_\_\_\_ door to ensure that it's safe to enter.
  3. Check the \_\_\_\_\_ valves to ensure that they are open.
  4. If the problem persists, \_\_\_\_\_ the engine.
-

---

**TASK ENG-02-18-47MLB: Loss of Lube Oil Pressure**

---

1. The EDM alarm sounds and will flash a \_\_\_\_\_ (Oil Pressure Low).
  2. The lube oil alarm is \_\_\_\_\_.
  3. The engineer should check the engine \_\_\_\_\_ for quantity and \_\_\_\_\_ and for obvious leaks.
  4. In an emergency, oil pressure can be run as low as \_\_\_\_\_ PSI at idle and \_\_\_\_\_ PSI at full load.
- 

---

**TASK ENG-02-19-47MLB: Main Engine High Water Temperature**

---

1. The EDM alarm sounds and will flash Code \_\_\_\_\_ (Coolant Temperature High).
  2. If steam is present or if the temperature is \_\_\_\_\_ °F or above, \_\_\_\_\_ the engines.
  3. If steam is flowing from the expansion tank vent, the engine(s) should be \_\_\_\_\_ and \_\_\_\_\_.
  4. If the strainers are clean, check the \_\_\_\_\_ pump cover lightly with the \_\_\_\_\_ of the \_\_\_\_\_ for coolness.
  5. If the \_\_\_\_\_ is burned up, the cover will be very hot.
  6. \_\_\_\_\_ - \_\_\_\_\_ is poisonous.
  7. The manufacturer recommends shutdown of the engine(s) is the temperature exceeds \_\_\_\_\_ °F.
- 

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**TASK ENG-02-20-47MLB: Excessive Shaft Seal Leakage**

---

1. De-energize the \_\_\_\_\_ switch in the engine room to prevent \_\_\_\_\_ starting of the engine while working around the cardan shaft.
  2. The shaft must not be allowed to \_\_\_\_\_.
- 

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**TASK ENG-02-21-47MLB: Flooding**

---

1. The engineer will check the \_\_\_\_\_ to identify the space where flooding is indicated.
  2. The survivor's compartment bilge space is divided by the fuel tank into \_\_\_\_\_ and \_\_\_\_\_ gear spaces, and must be \_\_\_\_\_.
  3. What is the bilge flooding alarm system designed for?
-





## Section C. Reading Assignments - Division Three

### Introduction

The reading assignment(s) should be read prior to beginning instruction of each task.

### In this section

This section contains the following reading assignments:

Task Number	Reading Assignment	See Page
ENG-03-01-44MLB	<ul style="list-style-type: none"> <li>44' MLB Operator's Handbook, COMDTINST M16114.3 (series)</li> </ul>	3-25
ENG-03-02-44MLB	<ul style="list-style-type: none"> <li>44' MLB Operator's Handbook, COMDTINST M16114.3 (series)</li> </ul>	3-26
ENG-03-03-44MLB	<ul style="list-style-type: none"> <li>44' MLB Operator's Handbook, COMDTINST M16114.3 (series)</li> </ul>	3-27
ENG-03-04-44MLB	<ul style="list-style-type: none"> <li>44' MLB Operator's Handbook, COMDTINST M16114.3 (series)</li> <li>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</li> </ul>	3-27
ENG-03-05-44MLB	<ul style="list-style-type: none"> <li>44' MLB Operator's Handbook, COMDTINST M16114.3 (series)</li> </ul>	3-27
ENG-03-06-44MLB	<ul style="list-style-type: none"> <li>44' MLB Operator's Handbook, COMDTINST M16114.3 (series)</li> <li>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</li> </ul>	3-28
ENG-03-07-44MLB	<ul style="list-style-type: none"> <li>44' MLB Operator's Handbook, COMDTINST M16114.3 (series)</li> </ul>	3-28
ENG-03-08-44MLB	<ul style="list-style-type: none"> <li>44' MLB Operator's Handbook, COMDTINST M16114.3 (series)</li> <li>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</li> </ul>	3-28
ENG-03-09-44MLB	<ul style="list-style-type: none"> <li>44' MLB Operator's Handbook, COMDTINST M16114.3 (series)</li> <li>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</li> </ul>	3-28



Task Number	Reading Assignment	See Page
ENG-03-10-44MLB	<ul style="list-style-type: none"> <li>44' MLB Operator's Handbook, COMDTINST M16114.3 (series)</li> <li>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</li> </ul>	3-29
ENG-03-11-44MLB	<ul style="list-style-type: none"> <li>44' MLB Operator's Handbook, COMDTINST M16114.3 (series)</li> <li>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</li> </ul>	3-29
ENG-03-12-44MLB	<ul style="list-style-type: none"> <li>44' MLB Operator's Handbook, COMDTINST M16114.3 (series)</li> <li>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</li> </ul>	3-29
ENG-03-13-44MLB	<ul style="list-style-type: none"> <li>44' MLB Operator's Handbook, COMDTINST M16114.3 (series)</li> <li>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</li> </ul>	3-29
ENG-03-14-44MLB	<ul style="list-style-type: none"> <li>44' MLB Operator's Handbook, COMDTINST M16114.3 (series)</li> <li>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</li> </ul>	3-30
ENG-03-15-44MLB	<ul style="list-style-type: none"> <li>44' MLB Operator's Handbook, COMDTINST M16114.3 (series)</li> <li>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</li> </ul>	3-30
ENG-03-16-44MLB	<ul style="list-style-type: none"> <li>44' MLB Operator's Handbook, COMDTINST M16114.3 (series)</li> <li>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</li> </ul>	3-30
ENG-03-17-44MLB	<ul style="list-style-type: none"> <li>None assigned</li> </ul>	

**TASK ENG-03-01-44MLB: Locate Components and Accessories of the 44' MLB Propulsion System**

---

1. The Detroit Diesel model \_\_\_\_\_ marine engine is a \_\_\_\_\_-cylinder, \_\_\_\_\_-cycle, \_\_\_\_\_ cubic inch displacement engine.
  2. The boat's fuel (\_\_\_\_\_ diesel) is carried in a \_\_\_\_\_ gallon tank located in the \_\_\_\_\_.
  3. According to the 44' MLB fuel tank sounding table, at 13 sounding (inches), you will have \_\_\_\_\_ gallons of fuel.
  4. Operating fuel pressure at \_\_\_\_\_ engine RPMs should be between \_\_\_\_\_ - \_\_\_\_\_ PSI.
  5. A seachest located port of the centerline between Frames \_\_\_\_\_ and \_\_\_\_\_ serves both engines.
  6. Direct cooling of the engines is done by a \_\_\_\_\_ - \_\_\_\_\_ freshwater system.
  7. Exhaust gases pass into \_\_\_\_\_ inch stainless steel exhaust tubes, which connect to a transverse \_\_\_\_\_ inch exhaust pipe aft of Bulkhead \_\_\_\_\_.
  8. The engine alarm system is operated by the \_\_\_\_\_-volt \_\_\_\_\_ electrical system and consists of:
    - a.
    - b.
    - c.
    - d.
    - e.
  9. The 44' MLB is fitted with two \_\_\_\_\_-inch diameter, \_\_\_\_\_-inch pitch, \_\_\_\_\_ blade propellers.
  10. Which propeller is right-handed?
-



## **TASK ENG-03-02-44MLB:    Locate Components and Accessories of the 44' MLB Electrical System**

---

1.    Battery gases are highly \_\_\_\_\_.
  2.    There are two electrical panels:
    - a.
    - b.
  3.    List the items powered by the DC breaker panel:
    - a.
    - b.
    - c.
    - d.
    - e.
    - f.
    - g.
    - h.
    - i.
    - j.
    - k.
-

---

**TASK ENG-03-03-44MLB: Set Watertight Integrity Aboard the 44' MLB**

---

1. List the watertight spaces and appropriate bulkheads:

---

**TASK ENG-03-04-44MLB: List the Disabling Casualties and Restrictive Discrepancies that Prevent the 44' MLB from Getting Underway**

---

1. Disabling casualties are those which make the boat \_\_\_\_\_.
  2. The Operational Commander will be notified immediately or within \_\_\_\_\_ hours after the casualty has been discovered.
  3. If the casualty cannot be repaired within 48 hours, a \_\_\_\_\_ shall be sent within \_\_\_\_\_ hours.
- 

**TASK ENG-03-05-44MLB: Conduct a Pre-Start Check-Off on the 44' MLB**

---

1. Energize the \_\_\_\_\_ and general lighting on the circuit breaker panel located on the \_\_\_\_\_.
  2. Open \_\_\_\_\_ valves, and check \_\_\_\_\_ for cleanliness.
  3. Secure \_\_\_\_\_ - \_\_\_\_\_ power at the boat \_\_\_\_\_ power panel and at the dockside; then disconnect the \_\_\_\_\_ cable.
  4. Ensure all \_\_\_\_\_ electrical power switches are in the \_\_\_\_\_ position.
-



---

**TASK ENG-03-06-44MLB: Start the 44' MLB**

---

1. Energize starting and alarm breakers on the \_\_\_\_\_-volt DC power panel.
2. If an engine does not start within \_\_\_\_\_ seconds, allow it to stand for \_\_\_\_\_ seconds.
3. List the possible causes for an engine that will not start:

---

**TASK ENG-03-07-44MLB: Secure the 44' MLB After Operations**

---

1. Secure all switches on the \_\_\_\_\_ panel for electronic equipment with the exception of \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.
2. Visually inspect all:
3. Inspect all \_\_\_\_\_ compartments and \_\_\_\_\_ all hatches and \_\_\_\_\_.
4. Secure the main \_\_\_\_\_ on the \_\_\_\_\_ panel.

---

**TASK ENG-03-08-44MLB: Capsizing**

---

1. The average time a 44' MLB will be under water will be approximately \_\_\_\_\_ to \_\_\_\_\_ seconds.
2. Secure the electrical \_\_\_\_\_ with the exception of the \_\_\_\_\_.

---

**TASK ENG-03-09-44MLB: Steering Casualty**

---

1. The 44' MLB steering system is \_\_\_\_\_ and has an operating pressure of up to \_\_\_\_\_ PSI.
  2. The system has a maximum pressure rating of \_\_\_\_\_ PSI, but the relief valve is set at \_\_\_\_\_ PSI.
  3. If a loss of hydraulic steering fluid occurs, \_\_\_\_\_ to \_\_\_\_\_ the \_\_\_\_\_ engine may result in damage to the engine and/or steering pump.
  4. Crew members working aft of bulkhead \_\_\_\_\_ during towing operations are placed in grave danger.
-



---

**TASK ENG-03-10-44MLB: Bilge Flooding**

---

1. The \_\_\_\_\_ and \_\_\_\_\_ bilges must be pumped from the \_\_\_\_\_.
  2. The lazarette can be sluiced into the aft survivor's compartment by the sluice valve located at bulkhead \_\_\_\_\_.
  3. What is the sluice valve?
  4. Operation of the bilge \_\_\_\_\_ requires a \_\_\_\_\_ in the \_\_\_\_\_ at all times since the \_\_\_\_\_ can be flooded using this system.
- 

**TASK ENG-03-11-44MLB: Engine Room Fire**

---

1. What is the greatest single potential for disaster on a boat?
  2. A by-product produced when burning Halon 1301 gas in a diesel engine is \_\_\_\_\_ gas.
  3. You should wait approximately \_\_\_\_\_ seconds after pulling the engine stops before discharging the Halon.
  4. How long should the compartment be ventilated?
- 

**TASK ENG-03-12-44MLB: Main Engine High Water Temperature**

---

1. If steam is present or engine temperature is above \_\_\_\_\_ degrees, \_\_\_\_\_ engine.
  2. Removing \_\_\_\_\_ while engine is hot may cause coolant to flash to steam causing \_\_\_\_\_.
- 

**TASK ENG-03-13-44MLB: Loss of Lubrication Oil Pressure**

---

1. If engine oil pressure gauge reads \_\_\_\_\_, \_\_\_\_\_ engine immediately.
  2. Check the following for possible problems:
    - a.
    - b.
    - c.
    - d.
    - e.
    - f.
-



### **TASK ENG-03-14-44MLB: Loss of Control of Engine RPMs**

---

1. Turn into the \_\_\_\_\_ engine, to put load on engine.
  2. Trip the emergency \_\_\_\_\_ on front portion of blower.
  3. DO NOT use \_\_\_\_\_ fire fighting system to secure engines.
- 

### **TASK ENG-03-15-44MLB: Reduction Gear Failure**

---

1. Reduction gear pressure in *forward* and *reverse* is \_\_\_\_\_ to \_\_\_\_\_.
  2. Check expansion tank for \_\_\_\_\_.
- 

### **TASK ENG-03-16-44MLB: Loss of Fuel Oil Pressure**

---

1. Operating fuel oil pressure at 1800 engine RPM should be between \_\_\_\_\_ - \_\_\_\_\_.
  2. The size of the restrictive orifice is \_\_\_\_\_.
-



## Section D. Reading Assignments - Division Four

### Introduction

The reading assignment(s) should be read prior to beginning instruction of each task.

### In this section

This section contains the following reading assignments:

Task Number	Reading Assignment	See Page
ENG-04-01-30SPC	• Applicable Technical Manuals	3-33
ENG-04-02-30SPC	• Applicable Technical Manuals	3-33
ENG-04-03-30SPC	• Applicable Technical Manuals	3-33
ENG-04-04-30SPC	• Applicable Technical Manuals	3-33
ENG-04-05-30SPC	• Applicable Technical Manuals	3-34
ENG-04-06-30SPC	• Applicable Technical Manuals	3-34
ENG-04-07-30SPC	• Applicable Technical Manuals	3-34
ENG-04-08-30SPC	• Applicable Technical Manuals	3-34
ENG-04-09-30SPC	• Applicable Technical Manuals	3-35
ENG-04-10-30SPC	• Applicable Technical Manuals	3-35
ENG-04-11-30SPC	• Applicable Technical Manuals	3-35
ENG-04-12-30SPC	• None assigned	



---

**TASK ENG-04-01-30SPC:    Locate Components and Accessories of the SPC Propulsion System**

---

1. The engine on the SPC is a \_\_\_\_\_ marine diesel engine.
  2. State the following specifications for the engines in the SPC:
    - a. \_\_\_\_\_ horsepower
    - b. \_\_\_\_\_ stroke
    - c. \_\_\_\_\_ cylinder
    - d. \_\_\_\_\_ cooled
  3. A \_\_\_\_\_ strainer is installed between the raw water supply line between the seachest and the main engine raw water pump.
  4. The engine is indirectly cooled by a \_\_\_\_\_, \_\_\_\_\_ type pump.
- 

**TASK ENG-04-02-30SPC:    Conduct a Pre-Start Check-Off on the SPC**

---

1. When the engine is secured, the marine gear oil level \_\_\_\_\_ should be above the \_\_\_\_\_ mark on the dipstick.
  2. The marine gear oil level must be rechecked after the engine is \_\_\_\_\_ and \_\_\_\_\_ to confirm the correct level on the \_\_\_\_\_.
  3. Never start or \_\_\_\_\_ the engines with the \_\_\_\_\_ power energized. Damage to the \_\_\_\_\_ may occur.
- 

**TASK ENG-04-03-30SPC:    Start the SPC**

---

1. Make sure the Morse controls are in \_\_\_\_\_.
  2. Do not depress both starter buttons \_\_\_\_\_. Start engines \_\_\_\_\_ at a time.
  3. With the main engines at idle, the oil levels of the marine gear should be between \_\_\_\_\_ and \_\_\_\_\_ on the dipstick.
- 

**TASK ENG-04-04-30SPC:    Secure the SPC After Operations**

---

1. If the portable pump was used, \_\_\_\_\_ with unit spare while it is being cleaned and serviced. Replacement of the pump will allow the boat to remain \_\_\_\_\_ capable.
  2. If recent run at high RPMs, allow the engines to idle \_\_\_\_\_ to \_\_\_\_\_ minutes for cool-down.
  3. The engine stops remain in the \_\_\_\_\_ position at all times when the engine is secured. Failure to do so may allow fuel oil to leak through the injectors into the cylinders causing a \_\_\_\_\_ of the engine.
-



---

**TASK ENG-04-05-30SPC: Engine will not Turn Over when the Starter Button is Pushed**

---

1. Ensure throttle is in \_\_\_\_\_.
  2. Depress the \_\_\_\_\_ engine \_\_\_\_\_ button and hold until the engine starts. If an engine does not start within \_\_\_\_\_ seconds, release the \_\_\_\_\_ button and let stand \_\_\_\_\_ minutes, and repeat starting procedures.
  3. Battery voltage is \_\_\_\_\_ volts.
- 

**TASK ENG-04-06-30SPC: Engine Running Uneven or Stalls**

---

1. Check \_\_\_\_\_ for contamination.
  2. Check fuel oil supply lines for \_\_\_\_\_.
  3. Ensure throttle is in the \_\_\_\_\_ position.
- 

**TASK ENG-04-07-30SPC: Loss of Steering**

---

1. List the four likely causes of steering loss:
    - a.
    - b.
    - c.
    - d.
  2. If the helm turns \_\_\_\_\_ without any effect on the \_\_\_\_\_, suspect a broken \_\_\_\_\_, \_\_\_\_\_, air in the system, or \_\_\_\_\_ fitting.
  3. \_\_\_\_\_ oil is used in the steering system.
- 

**TASK ENG-04-08-30SPC: Reduction Gear Failure**

---

1. Disconnect linkage at the marine gear to determine if
  2. The capacity of the marine gear is \_\_\_\_\_ quarts.
  3. \_\_\_\_\_ oil is used in the marine gear.
  4. The COME HOME device is only on the \_\_\_\_\_ engine.
-

### **TASK ENG-04-09-30SPC: Loss of Main Engine Lube Oil Pressure**

- 
1. A main engine lube oil pressure loss will \_\_\_\_\_ the \_\_\_\_\_ system and energize the \_\_\_\_\_ light.
  2. The operating parameters is \_\_\_\_\_ min \_\_\_\_\_ max at idle \_\_\_\_\_ min \_\_\_\_\_ max at *cruising*.
- 

### **TASK ENG-04-10-30SPC: Main Engine High Water Temperature**

- 
1. While the engine is secure and the \_\_\_\_\_ is in the *up* position, to prevent seizure until the engine cools, \_\_\_\_\_ the engine with the starter.
  2. If main engine jacket water reaches \_\_\_\_\_, it will activate the alarm.
  3. The raw water pump is a \_\_\_\_\_.
- 

### **TASK ENG-04-11-30SPC: Overheating Shaft Packing Gland**

- 
1. If there is no water coming from the shaft packing gland \_\_\_\_\_ to \_\_\_\_\_ drops per and the \_\_\_\_\_ box gland is too hot to \_\_\_\_\_, immediately take the following three corrective actions:
    - a. \_\_\_\_\_
    - b. \_\_\_\_\_
    - c. \_\_\_\_\_
  2. Do not place a \_\_\_\_\_ near the turning \_\_\_\_\_ until you bring the \_\_\_\_\_ to clutch speed.
-



## Section E. Reading Assignments - Division Five

### Introduction

The reading assignment(s) should be read prior to beginning instruction of each task.

### In this section

This section contains the following reading assignments:

Task Number	Reading Assignment	See Page
ENG-05-01-49BUSL	<ul style="list-style-type: none"> <li>49' BUSL Operator's Handbook, COMDTINST M16114.22 (series)</li> <li>Boat Crew Seamanship Manual, COMDTINST M16114.5 (series), Chapter 8, Section D</li> </ul>	3-39
ENG-05-02-49BUSL	<ul style="list-style-type: none"> <li>49' BUSL Operator's Handbook, COMDTINST M16114.22 (series)</li> <li>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</li> </ul>	3-39
ENG-05-03-49BUSL	<ul style="list-style-type: none"> <li>49' BUSL Operator's Handbook, COMDTINST M16114.22 (series)</li> </ul>	3-39
ENG-05-04-49BUSL	<ul style="list-style-type: none"> <li>49' BUSL Operator's Handbook, COMDTINST M16114.22 (series)</li> </ul>	3-40
ENG-05-05-49BUSL	<ul style="list-style-type: none"> <li>49' BUSL Operator's Handbook, COMDTINST M16114.22 (series)</li> </ul>	3-40
ENG-05-06-49BUSL	<ul style="list-style-type: none"> <li>49' BUSL Operator's Handbook, COMDTINST M16114.22 (series)</li> <li>Boat Crew Seamanship Manual, COMDTINST M16114.5 (series), Chapter 8, Section E</li> </ul>	3-40
ENG-05-07-49BUSL	<ul style="list-style-type: none"> <li>49' BUSL Operator's Handbook, COMDTINST M16114.22 (series)</li> <li>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</li> <li>Boat Crew Seamanship Manual, COMDTINST M16114.5 (series), Chapter 8, Section E</li> </ul>	3-40
ENG-05-08-49BUSL	<ul style="list-style-type: none"> <li>49' BUSL Operator's Handbook, COMDTINST M16114.22 (series)</li> <li>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</li> </ul>	3-40



Task Number	Reading Assignment	See Page
ENG-05-09-49BUSL	<ul style="list-style-type: none"> <li>• <i>49' BUSL Operator's Handbook</i>, COMDTINST M16114.22 (series)</li> <li>• <i>Coast Guard Boat Readiness and Standardization Program Manual</i>, COMDTINST M16114.24 (series)</li> </ul>	3-41
ENG-05-10-49BUSL	<ul style="list-style-type: none"> <li>• <i>49' BUSL Operator's Handbook</i>, COMDTINST M16114.22 (series)</li> <li>• <i>Boat Crew Seamanship Manual</i>, COMDTINST M16114.5 (series), Chapter 8, Section E</li> </ul>	3-41
ENG-05-11-49BUSL	<ul style="list-style-type: none"> <li>• <i>49' BUSL Operator's Handbook</i>, COMDTINST M16114.22 (series)</li> <li>• <i>Coast Guard Boat Readiness and Standardization Program Manual</i>, COMDTINST M16114.24 (series)</li> </ul>	3-41
ENG-05-12-49BUSL	<ul style="list-style-type: none"> <li>• <i>49' BUSL Operator's Handbook</i>, COMDTINST M16114.22 (series)</li> <li>• <i>Coast Guard Boat Readiness and Standardization Program Manual</i>, COMDTINST M16114.24 (series)</li> </ul>	3-41
ENG-05-13-49BUSL	<ul style="list-style-type: none"> <li>• <i>49' BUSL Operator's Handbook</i>, COMDTINST M16114.22 (series)</li> <li>• <i>Boat Crew Seamanship Manual</i>, COMDTINST M16114.5 (series), Chapter 8, Section E</li> </ul>	3-41
ENG-05-14-49BUSL	<ul style="list-style-type: none"> <li>• <i>49' BUSL Operator's Handbook</i>, COMDTINST M16114.22 (series)</li> <li>• <i>Boat Crew Seamanship Manual</i>, COMDTINST M16114.5 (series), Chapter 18, Sections I and K</li> </ul>	3-42
ENG-05-15-49BUSL	<ul style="list-style-type: none"> <li>• None assigned</li> </ul>	

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**TASK ENG-05-01-49BUSL: Locate Components and Accessories of the BUSL Propulsion System**

---

1. The main engines on the 49' BUSL are twin \_\_\_\_\_ marine diesel engines.
  2. State the following specifications for the engines in the BUSL:
    - a. \_\_\_\_\_ horsepower
    - b. \_\_\_\_\_ cylinder
    - c. \_\_\_\_\_ cooled
    - d. \_\_\_\_\_ rotation from the front
  3. Model 6CTA 803M1 represents:
  4. Two fuel tanks are located on the port and starboard sides between bulkheads \_\_\_\_\_ and \_\_\_\_\_.
  5. Each engine is cooled by a \_\_\_\_\_, \_\_\_\_\_ type pump.
- 

**TASK ENG-05-02-49BUSL: List the Disabling Casualties and Restrictive Discrepancies that Prevent the 49' BUSL from Getting Underway**

---

1. Disabling casualties are those which make the boat \_\_\_\_\_.
  2. If a disabling casualty is identified when the boat is moored, the boat shall not get \_\_\_\_\_ until the \_\_\_\_\_ is corrected.
  3. Disabling casualties shall be reported to the \_\_\_\_\_ by the most expedient means.
  4. List four of the disabling casualties dealing with engine parameters.
    - a.
    - b.
    - c.
    - d.
  5. List four of the restrictive discrepancies.
    - a.
    - b.
    - c.
    - d.
- 

**TASK ENG-05-03-49BUSL: Conduct a Pre-Start Check-Off on the 49' BUSL**

---

1. When the engine is secured, the marine gear oil level \_\_\_\_\_ should be above the \_\_\_\_\_ mark on the dipstick.
  2. The marine gear oil level must be rechecked after the engine is \_\_\_\_\_ and \_\_\_\_\_ to confirm the correct level on the \_\_\_\_\_.
  3. The engine will not start unless \_\_\_\_\_ PSI oil pressure is available.
  4. The start button may need to be depressed \_\_\_\_\_ or more times to develop sufficient oil pressure for starting.
-



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**TASK ENG-05-04-49BUSL: Start the 49' BUSL**

---

1. Make sure the throttle levers are in the \_\_\_\_ position.
  2. Do not crank the engine for more than \_\_\_\_ seconds at a time.
  3. With the main engines at idle, the oil levels of the marine gear should be between \_\_\_\_ and \_\_\_\_ on the dipstick.
- 

---

**TASK ENG-05-05-49BUSL: Secure the 49' BUSL After Operations**

---

1. Secure all 24 VDC breakers in the machinery space except those for the \_\_\_\_, \_\_\_\_\_ and lighting systems.
  2. If recent run at high RPMs, allow the engines to idle \_\_\_\_ to \_\_\_\_ minutes for cool-down.
  3. The engine stops remain in the \_\_\_\_ position at all times when the engine is secured. Failure to do so may allow fuel oil to leak through the injectors into the cylinders causing a \_\_\_\_ of the engine.
- 

---

**TASK ENG-05-06-49BUSL: Loss of Fuel Oil Pressure**

---

1. The engineer should request that the coxswain reduce the engine RPMs to \_\_\_\_.
  2. Ensure the engine room is safe, enter the engine room and check the \_\_\_\_ for the presence of fuel oil.
  3. Check the primary \_\_\_\_ for \_\_\_\_ and/or \_\_\_\_.
  4. Verify the \_\_\_\_ levels.
  5. If necessary \_\_\_\_ the fuel system.
- 

---

**TASK ENG-05-07-49BUSL: Fire in the Engine Room**

---

1. The \_\_\_\_ should secure the \_\_\_\_ and \_\_\_\_.
  2. The engineer should try to determine the \_\_\_\_ and \_\_\_\_ of the fire by looking through the portlight in the watertight door.
  3. There is a \_\_\_\_ second delay built into the CO<sub>2</sub> system.
  4. The fixed CO<sub>2</sub> fire extinguishing system must be \_\_\_\_ operated.
- 

---

**TASK ENG-05-08-49BUSL: Steering Casualty**

---

1. List the four likely causes of steering loss:
    - a.
    - b.
    - c.
    - d.
  2. If the helm turns \_\_\_\_ without any effect on the \_\_\_\_, suspect a broken \_\_\_\_, air in the system, or \_\_\_\_ fitting.
-

---

**TASK ENG-05-09-49BUSL: Striking a Submerged Object**

---

1. List the four actions that the crew should take after striking a submerged object:
    - a.
    - b.
    - c.
    - d.
  2. If engine vibration is noted after striking a submerged object, the engine RPM should be kept at \_\_\_\_\_ RPM below the vibration range.
- 

---

**TASK ENG-05-10-49BUSL: Reduction Gear Failure**

---

1. Ensure that the \_\_\_\_\_ light is lit at the control station in use.
  2. Check the \_\_\_\_\_ volt power panel for tripped breakers.
  3. Check that the \_\_\_\_\_ are attached to the reduction gear controls.
  4. Check oil level and restart the engine and check the clutch apply pressure, should be \_\_\_\_\_ to \_\_\_\_\_ PSI.
  5. The \_\_\_\_\_ valve on the reduction gear allows for \_\_\_\_\_ operation.
- 

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**TASK ENG-05-11-49BUSL: Loss of Lube Oil Pressure**

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1. A main engine lube oil pressure loss will \_\_\_\_\_ the \_\_\_\_\_ and energize the \_\_\_\_\_ light located in the pilothouse on the \_\_\_\_\_.
- 

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**TASK ENG-05-12-49BUSL: Main Engine High Water Temperature**

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1. If after reducing the engine RPMs to *clutch ahead* steam is present or the engine temperature is above \_\_\_\_\_ °F, secure the engine.
  2. Check the \_\_\_\_\_ and outlet pipes to the keel cooler if there is no steam present.
  3. If during operation the engine temperature exceeds \_\_\_\_\_ °F with a decrease in engine load or speed, secure the engine.
- 

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**TASK ENG-05-13-49BUSL: Excessive Shaft Seal Leakage**

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1. The engineer should realign the \_\_\_\_\_ assembly and check to see if the \_\_\_\_\_ has backed off.
  2. If after alignment excessive water continues to leak from the seal, the engineer should recommend \_\_\_\_\_.
  3. If after alignment the seal continues to leak, stop the engine, \_\_\_\_\_ the affected shaft with \_\_\_\_\_.
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## **TASK ENG-05-14-49BUSL: Flooding**

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1. The central alarm panel located \_\_\_\_\_ will provide and audible and visual indication of flooding.
  2. When is it required to verify the operation of the bilge alarm system?
  3. The engineer should proceed to the space with the flooding alarm and report to the coxswain the \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.
  4. List the location of the installed electric bilge pumps.
-

## Section F. Reading Assignments - Division Six

### Introduction

The reading assignment(s) should be read prior to beginning instruction of each task.

### In this section

This section contains the following reading assignments:

Task Number	Reading Assignment	See Page
ENG-06-01-55ANB	<ul style="list-style-type: none"> <li>55' ANB Information Book</li> <li>Boat Crew Seamanship Manual, COMDTINST M16114.5 (series), Chapter 8, Section D</li> </ul>	3-45
ENG-05-02-55ANB	<ul style="list-style-type: none"> <li>55' ANB Information Book</li> <li>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</li> </ul>	3-46
ENG-06-03-55ANB	<ul style="list-style-type: none"> <li>55' ANB Information Book</li> </ul>	3-46
ENG-06-04-55ANB	<ul style="list-style-type: none"> <li>55' ANB Information Book</li> </ul>	3-46
ENG-06-05-55ANB	<ul style="list-style-type: none"> <li>55' ANB Information Book</li> </ul>	3-47
ENG-06-06-55ANB	<ul style="list-style-type: none"> <li>55' ANB Information Book</li> <li>Boat Crew Seamanship Manual, COMDTINST M16114.5 (series), Chapter 8, Section E</li> </ul>	3-47
ENG-06-07-55ANB	<ul style="list-style-type: none"> <li>55' ANB Information Book</li> <li>Boat Crew Seamanship Manual, COMDTINST M16114.5 (series), Chapter 8, Section E</li> </ul>	3-47
ENG-06-08-55ANB	<ul style="list-style-type: none"> <li>55' ANB Information Book</li> <li>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</li> <li>Boat Crew Seamanship Manual, COMDTINST M16114.5 (series), Chapter 8, Section E</li> </ul>	3-47
ENG-06-09-55ANB	<ul style="list-style-type: none"> <li>55' ANB Information Book</li> <li>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</li> </ul>	3-48
ENG-06-10-55ANB	<ul style="list-style-type: none"> <li>55' ANB Information Book</li> <li>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</li> </ul>	3-48



Task Number	Reading Assignment	See Page
ENG-06-11-55ANB	<ul style="list-style-type: none"> <li>• <i>55' ANB Information Book</i></li> <li>• <i>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</i></li> </ul>	3-48
ENG-06-12-55ANB	<ul style="list-style-type: none"> <li>• <i>55' ANB Information Book</i></li> <li>• <i>Boat Crew Seamanship Manual, COMDTINST M16114.5 (series), Chapter 8, Section E</i></li> </ul>	3-49
ENG-06-13-55ANB	<ul style="list-style-type: none"> <li>• <i>55' ANB Information Book</i></li> <li>• <i>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</i></li> </ul>	3-49
ENG-06-14-55ANB	<ul style="list-style-type: none"> <li>• <i>55' ANB Information Book</i></li> </ul>	3-49
ENG-06-15-55ANB	<ul style="list-style-type: none"> <li>• <i>55' ANB Information Book</i></li> <li>• <i>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</i></li> </ul>	3-49
ENG-06-16-55ANB	<ul style="list-style-type: none"> <li>• <i>55' ANB Information Book</i></li> <li>• <i>Boat Crew Seamanship Manual, COMDTINST M16114.5 (series), Chapter 8, Section E</i></li> </ul>	3-49
ENG-06-17-55ANB	<ul style="list-style-type: none"> <li>• None assigned</li> </ul>	

**TASK ENG-06-01-55ANB:    Locate Components and Accessories of the ANB Propulsion System**

---

1. The main engines on the 55' ANB are twin \_\_\_\_\_ marine diesel engines.
  2. State the following specifications for the engines in the ANB:
    - a. \_\_\_\_\_ horsepower
    - b. \_\_\_\_\_ stroke
    - c. \_\_\_\_\_ cylinder
    - d. \_\_\_\_\_ cooled
    - e. \_\_\_\_\_ rotation from the front (each engine)
  3. Model 12V-71-T-I represents:
  4. Fuel oil is carried in two \_\_\_\_\_ tanks with a common center bulkhead.
  5. A \_\_\_\_\_ strainer is installed between the raw water supply line between the seachest and the main engine raw water pump.
  6. Each engine is indirectly cooled by a \_\_\_\_\_, \_\_\_\_\_ type pump.
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**TASK ENG-06-02-55ANB: List the Disabling Casualties and Restrictive Discrepancies that Prevent the 55' ANB from Getting Underway**

---

1. Disabling casualties are those which make the boat \_\_\_\_\_.
  2. If a disabling casualty is identified when the boat is moored, the boat shall not get \_\_\_\_\_ until the \_\_\_\_\_ is corrected.
  3. Disabling casualties shall be reported to the \_\_\_\_\_ by the most expedient means.
  4. List four of the disabling casualties dealing with engine parameters.
    - a.
    - b.
    - c.
    - d.
  5. List four of the restrictive discrepancies.
    - a.
    - b.
    - c.
    - d.
- 

**TASK ENG-06-03-55ANB: Conduct a Pre-Start Check-Off on the ANB**

---

1. When the engine is secured, the marine gear oil level \_\_\_\_\_ should be above the \_\_\_\_\_ mark on the dipstick.
  2. The marine gear oil level must be rechecked after the engine is \_\_\_\_\_ and \_\_\_\_\_ to confirm the correct level on the \_\_\_\_\_.
  3. Never start or \_\_\_\_\_ the engines with the \_\_\_\_\_ power energized. Damage to the \_\_\_\_\_ may occur.
- 

**TASK ENG-06-04-55ANB: Start the ANB (Generator Set and Main Engine)**

---

1. Make sure the Morse controls are in \_\_\_\_\_.
  2. Do not depress both starter buttons \_\_\_\_\_. Start engines \_\_\_\_\_ at a time.
  3. With the main engines at idle, the oil levels of the marine gear should between \_\_\_\_\_ and \_\_\_\_\_ on the dipstick.
-

---

**TASK ENG-06-05-55ANB:    Secure the ANB After Operations**

---

1. If the portable pump was used, \_\_\_\_\_ with unit spare while it is being cleaned and serviced. Replacement of the pump will allow the boat to remain \_\_\_\_\_ capable.
  2. If recent run at high RPMs, allow the engines to idle \_\_\_\_\_ to \_\_\_\_\_ minutes for cool-down.
  3. The engine stops remain in the \_\_\_\_\_ position at all times when the engine is secured. Failure to do so may allow fuel oil to leak through the injectors into the cylinders causing a \_\_\_\_\_ of the engine.
- 

---

**TASK ENG-06-06-55ANB:    Engine Will Not Turn Over When the Starter Button is Pushed**

---

1. At the 24/28VDC circuit breaker panel, ensure \_\_\_\_\_ breaker \_\_\_\_\_ and \_\_\_\_\_ and \_\_\_\_\_ are in the *on* position. All other circuit breakers must be in the *off* position.
  2. Depress the \_\_\_\_\_ engine \_\_\_\_\_ button and hold until the engine starts. If an engine does not start within \_\_\_\_\_ seconds, release the \_\_\_\_\_ button and let stand \_\_\_\_\_ minutes, and repeat starting procedures.
- 

---

**TASK ENG-06-07-55ANB:    Engine Running Uneven or Stalls**

---

1. Check \_\_\_\_\_ for contamination.
  2. Check fuel oil supply lines for \_\_\_\_\_
  3. Inspect \_\_\_\_\_ for presences of \_\_\_\_\_ or \_\_\_\_\_.
- 

---

**TASK ENG-06-08-55ANB:    Fire in the Engine Room**

---

1. The most logical and best \_\_\_\_\_ action is to remain \_\_\_\_\_ and take early \_\_\_\_\_ action when fire \_\_\_\_\_ conditions are observed.
  2. The fixed \_\_\_\_\_ fire extinguishing system has the capacity to extinguish and \_\_\_\_\_ fire provided the \_\_\_\_\_ for its use are followed carefully.
  3. If at any \_\_\_\_\_ there is doubt as to the ability to \_\_\_\_\_ and extinguish and \_\_\_\_\_ fire, or if it is determined to be \_\_\_\_\_ the capability of the portable fire extinguishers, use the \_\_\_\_\_ fire extinguishing system.
  4. The fixed Halon 1301 fire extinguishing system is \_\_\_\_\_ operated.
-



### **TASK ENG-06-09-55ANB: Loss of Steering**

---

1. List the four likely causes of steering loss:
    - a.
    - b.
    - c.
    - d.
  2. If the helm turns \_\_\_\_\_ without any effect on the \_\_\_\_\_, suspect a broken \_\_\_\_\_, \_\_\_\_\_, air in the system, or \_\_\_\_\_ fitting.
- 

### **TASK ENG-06-10-55ANB: Loss of Steering (Jammed Rudder)**

---

1. Exercise \_\_\_\_\_ caution when removing the \_\_\_\_\_ bar from either \_\_\_\_\_ arm.
  2. To prevent injury, man the \_\_\_\_\_ at \_\_\_\_\_ times while it is installed on a rudderpost.
  3. However, avoid \_\_\_\_\_ the \_\_\_\_\_ tiller by hand when \_\_\_\_\_ down.
- 

### **TASK ENG-06-11-55ANB: Collision with a Submerged Object**

---

1. Excessive \_\_\_\_\_ or \_\_\_\_\_ vibration may further \_\_\_\_\_ strut or \_\_\_\_\_ tube bearings.
  2. List the seven corrective actions for hitting a submerged object:
    - a.
    - b.
    - c.
    - d.
    - e.
    - f.
    - g.
-

---

**TASK ENG-06-12-55ANB: Reduction Gear Failure**

---

1. Using the free wheel feature, fill the marine gear \_\_\_\_\_ with oil.
  2. List the steps that need to be accomplished after you free wheel for over 8 hours of operation.
    - a.
    - b.
    - c.
  3. After you engage the COME HOME device and start the engine, the propeller will \_\_\_\_\_.
  4. The COME HOME device is only on the \_\_\_\_\_ engine.
- 

---

**TASK ENG-06-13-55ANB: Loss of Main Engine Lube Oil Pressure**

---

1. A main engine lube oil pressure loss will \_\_\_\_\_ the \_\_\_\_\_ system and energize the \_\_\_\_\_ light located \_\_\_\_\_.
- 

---

**TASK ENG-06-14-55ANB: Main Engine High Lube Oil Pressure**

---

1. Water \_\_\_\_\_ in the engine will cause \_\_\_\_\_ pressure.
  2. Leaky engine hatch gaskets in \_\_\_\_\_ or \_\_\_\_\_ can lead to water intrusion at the \_\_\_\_\_ intakes.
- 

---

**TASK ENG-06-15-55ANB: Main Engine High Water Temperature**

---

1. While the engine is secure and the \_\_\_\_\_ is in the *up* position, to prevent seizure until the engine cools, \_\_\_\_\_ the engine with the starter.
  2. If main engine jacket water reaches \_\_\_\_\_, it will activate the \_\_\_\_\_ system and energize an alarm located \_\_\_\_\_.
- 

---

**TASK ENG-06-16-55ANB: Overheating Shaft Packing Gland**

---

1. If there is no water coming from the shaft packing gland \_\_\_\_\_ to \_\_\_\_\_ drops per and the \_\_\_\_\_ box gland is too hot to \_\_\_\_\_, immediately take the following three corrective actions:
    - a.
    - b.
    - c.
  2. Do not place a \_\_\_\_\_ near the turning \_\_\_\_\_ until you bring the \_\_\_\_\_ to clutch speed.
-



## Section G. Reading Assignments - Division Seven

### Introduction

The reading assignment(s) should be read prior to beginning instruction of each task.

### In this section

This section contains the following reading assignments:

Task Number	Reading Assignment	See Page
ENG-07-01-TPSB	<ul style="list-style-type: none"> <li><i>Boston Whaler Manual/Applicable Technical Manuals</i></li> <li><i>Boat Crew Seamanship Manual, COMDTINST M16114.5 (series), Chapter 8, Section D</i></li> </ul>	3-53
ENG-07-02-TPSB	<ul style="list-style-type: none"> <li><i>Boston Whaler Manual/Applicable Technical Manuals</i></li> <li><i>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</i></li> </ul>	3-53
ENG-07-03-TPSB	<ul style="list-style-type: none"> <li><i>Boston Whaler Manual/Applicable Technical Manuals</i></li> </ul>	3-54
ENG-07-04-TPSB	<ul style="list-style-type: none"> <li><i>Boston Whaler Manual/Applicable Technical Manuals</i></li> </ul>	3-54
ENG-07-05-TPSB	<ul style="list-style-type: none"> <li><i>Boston Whaler Manual/Applicable Technical Manuals</i></li> </ul>	3-55
ENG-07-06-TPSB	<ul style="list-style-type: none"> <li><i>Boston Whaler Manual/Applicable Technical Manuals</i></li> <li><i>Boat Crew Seamanship Manual, COMDTINST M16114.5 (series), Chapter 8, Section E</i></li> </ul>	3-55
ENG-07-07-TPSB	<ul style="list-style-type: none"> <li><i>Boston Whaler Manual/Applicable Technical Manuals</i></li> <li><i>Boat Crew Seamanship Manual, COMDTINST M16114.5 (series), Chapter 8, Section E</i></li> </ul>	3-55



Task Number	Reading Assignment	See Page
ENG-07-08-TPSB	<ul style="list-style-type: none"> <li>• <i>Boston Whaler Manual/Applicable Technical Manuals</i></li> <li>• <i>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</i></li> <li>• <i>Boat Crew Seamanship Manual, COMDTINST M16114.5 (series), Chapter 8, Section E</i></li> </ul>	3-56
ENG-07-09-TPSB	<ul style="list-style-type: none"> <li>• <i>Boston Whaler Manual/Applicable Technical Manuals</i></li> <li>• <i>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</i></li> <li>• <i>Boat Crew Seamanship Manual, COMDTINST M16114.5 (series), Chapter 8, Section E</i></li> </ul>	3-56
ENG-07-10-TPSB	<ul style="list-style-type: none"> <li>• <i>Boston Whaler Manual/Applicable Technical Manuals</i></li> <li>• <i>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</i></li> <li>• <i>Boat Crew Seamanship Manual, COMDTINST M16114.5 (series), Chapter 8, Section E</i></li> </ul>	3-56
ENG-07-11-TPSB	<ul style="list-style-type: none"> <li>• <i>Boston Whaler Manual/Applicable Technical Manuals</i></li> <li>• <i>Coast Guard Boat Readiness and Standardization Program Manual, COMDTINST M16114.24 (series)</i></li> <li>• <i>Boat Crew Seamanship Manual, COMDTINST M16114.5 (series), Chapter 8, Section E</i></li> </ul>	3-57
ENG-07-12-TPSB	<ul style="list-style-type: none"> <li>• <i>Boston Whaler Manual/Applicable Technical Manuals</i></li> <li>• <i>Boat Crew Seamanship Manual, COMDTINST M16114.5 (series), Chapter 8, Section E</i></li> </ul>	3-57



Task Number	Reading Assignment	See Page
ENG-07-13-TPSB	<ul style="list-style-type: none"> <li>• <i>Boston Whaler Manual</i>/Applicable Technical Manuals</li> <li>• <i>Coast Guard Boat Readiness and Standardization Program Manual</i>, COMDTINST M16114.24 (series)</li> <li>• <i>Boat Crew Seamanship Manual</i>, COMDTINST M16114.5 (series), Chapter 8, Section E</li> </ul>	3-57
ENG-07-14-TPSB	<ul style="list-style-type: none"> <li>• <i>Boston Whaler Manual</i>/Applicable Technical Manuals</li> </ul>	3-57
ENG-07-15-TPSB	<ul style="list-style-type: none"> <li>• <i>Boston Whaler Manual</i>/Applicable Technical Manuals</li> <li>• <i>Coast Guard Boat Readiness and Standardization Program Manual</i>, COMDTINST M16114.24 (series)</li> </ul>	3-57
ENG-07-16-TPSB	<ul style="list-style-type: none"> <li>• None assigned</li> </ul>	



---

**TASK ENG-07-01-TPSB:      Conduct a Pre-Start Check-Off on the TPSB**

---

1. Rotate the main battery barrel switch to the \_\_\_\_\_ position.
  2. Energize the main breakers and power switches on the \_\_\_\_\_ volt circuit breaker panel.
  3. Energize the main \_\_\_\_\_ switches.
  4. Check the engine \_\_\_\_\_ tank and \_\_\_\_\_ the system.
  5. Check the fuel \_\_\_\_\_ and \_\_\_\_\_ the system.
- 

---

**TASK ENG-07-02-TPSB:      Locate Components and Accessories of the TPSB**

---

1. State the following specifications for the outboard engines:
    - a. Make
    - b. Model
    - c. Shaft rotation (each engine)
  2. The engine stop controls are located \_\_\_\_\_.
  3. Batteries are located \_\_\_\_\_.
  4. Compassing sending unit is located \_\_\_\_\_.
  5. State the location of the following gauges:
    - a. Oil level gauge
    - b. Trim level gauge
    - c. Tachometers
    - d. Water temperature
  6. State the location and capacity of the fuel tank, filler neck, and primer bulb.
  7. State the location of the VRO tank and primer bulb.
  8. The cooling system suction is located \_\_\_\_\_ and the cooling system weep hole is located \_\_\_\_\_.
  9. The 12-volt main relay is located \_\_\_\_\_.
-

---

**TASK ENG-07-03-TPSB:      Locate Installed Equipment and Fittings on the TPSB**

---

1. State the location of the following items:
    - a. 50 cal mount
    - b. Bilge access plate
    - c. Anchor locker hatch
    - d. Forward drain plug
    - e. Battery parallel switch
    - f. GPS
    - g. Loudhailer control
    - h. PRC117 radio
    - i. VHF radio
    - j. PRC antenna (high and low)
    - k. RADAR transceiver
    - l. Start/Stop switch
    - m. Engine circuit breakers
    - n. Kill switch
    - o. Main circuit breakers
    - p. Depth finder transducer
- 

**TASK ENG-07-04-TPSB:      Energize the Electrical and Electronic Systems on the TPSB**

---

1. What is the purpose of the TPSB staters?
  
  2. The port engine battery switch serves the \_\_\_\_\_ and \_\_\_\_\_ loads.
  3. The AUX battery switch supplies power to \_\_\_\_\_.
  4. The starboard engine battery switch serves the \_\_\_\_\_ and the \_\_\_\_\_.
  5. What is the function of the battery parallel system?
-



---

**TASK ENG-07-05-TPSB:      Start the TPSB**

---

1. At idle the engine RPMs should be \_\_\_\_\_, the water temperature \_\_\_\_\_ degrees Fahrenheit and the water pressure \_\_\_\_\_ PSI.
  2. The throttles should be in the \_\_\_\_\_ position when starting.
  3. The primer bulb should be squeezed \_\_\_\_\_.
  4. The starter button should be depressed for \_\_\_\_\_ seconds. If the engine does not start, wait \_\_\_\_\_ seconds before attempting a restart.
- 

---

**TASK ENG-07-06-TPSB:      Secure the TPSB**

---

1. When moored at a dock or pier, the outboards should be \_\_\_\_\_ up and all power switches should be \_\_\_\_\_.
  2. Visually inspect the \_\_\_\_\_ and skeg.
  3. Bilge pumps should be in the \_\_\_\_\_ position.
  4. Top of the \_\_\_\_\_ level.
  5. If the TPSB is loaded on a trailer, the outboards should be \_\_\_\_\_ down.
- 

---

**TASK ENG-07-07-TPSB:      State the Equipment Casualties That Will Prevent the TPSB from Getting Underway**

---

1. List the eight pieces of equipment that should a casualty occur would prevent the TPSB from getting underway.
    - a.
    - b.
    - c.
    - d.
    - e.
    - f.
    - g.
    - h.
-

---

**TASK ENG-07-08-TPSB:      Take Corrective Action for Engine High Water Temperature**

---

1. What is the normal operating range for the water temperature?
2. State the six corrective actions to be taken for engine high water temperature:
  - a.
  - b.
  - c.
  - d.
  - e.
  - f.
3. What procedure should be followed to keep an engine from seizing?

---

**TASK ENG-07-09-TPSB:      Take Corrective Action for an Engine Oil Failure**

---

1. If an engine experiences no/low oil pressure, the throttles should be placed in \_\_\_\_\_ and the engines secured.
2. Perform a quick \_\_\_\_\_ - \_\_\_\_\_ and if oil pressure continues to decrease \_\_\_\_\_ the \_\_\_\_\_.
3. The oil system should be \_\_\_\_\_ using the \_\_\_\_\_ bulb.
4. Once the engine is secured, check for an \_\_\_\_\_ around the lower unit.
5. State what S.L.O.W. means in regards to an engine oil failure casualty.

---

**TASK ENG-07-10-TPSB:      Take Corrective Action for Outboard Motor Vibration or Spun Propeller**

---

1. Note the \_\_\_\_\_ at which the vibration occurs.
  2. Bringing throttles to \_\_\_\_\_ note any change in vibration.
  3. Secure the engine and \_\_\_\_\_ the outboard to inspect the \_\_\_\_\_ and \_\_\_\_\_.
-



---

**TASK ENG-07-11-TPSB:      Take Corrective Action for Engine Failing to Start with the Starter Turning Over**

---

1. Check the \_\_\_\_\_ switch \_\_\_\_\_.
  2. Check the condition of the fuel system \_\_\_\_\_ bulbs.
  3. Check the fuel system, in particular the system \_\_\_\_\_ and the \_\_\_\_\_ and housing.
  4. Check the engine main \_\_\_\_\_.
- 

---

**TASK ENG-07-12-TPSB:      Take Corrective Action for an Engine That Will Not Turn Over When the Starter Button is Pushed**

---

1. The engine/throttle should be in \_\_\_\_\_.
  2. The position of the starter \_\_\_\_\_ should be *on/in*.
  3. The engine voltmeter should read approximately \_\_\_\_\_ VDC.
- 

---

**TASK ENG-07-13-TPSB:      Take Corrective Action for Outboard Failing to Engage Forward or Reverse**

---

1. Check the linkage at the \_\_\_\_\_ and the \_\_\_\_\_.
  2. With the engine operating, verify that the \_\_\_\_\_ is \_\_\_\_\_.
- 

---

**TASK ENG-07-14-TPSB:      Fire Onboard**

---

1. Bring the \_\_\_\_\_ to *neutral* and \_\_\_\_\_ the \_\_\_\_\_.
  2. Notify the \_\_\_\_\_.
  3. If required by the location/type of fire, secure the \_\_\_\_\_.
- 

---

**TASK ENG-07-15-TPSB:      Collision with a Submerged Object**

---

1. Bring the \_\_\_\_\_ to *neutral*. Notify the crew.
  2. Check \_\_\_\_\_ and \_\_\_\_\_ for flooding.
  3. Secure the engines and raise the \_\_\_\_\_ to check the lower units, the \_\_\_\_\_ and the \_\_\_\_\_.
-

## Section H. Reading Assignments - Division Eight

### Introduction

The reading assignment(s) should be read prior to beginning instruction of each task.

### In this section

This section contains the following reading assignments:

Task Number	Reading Assignment	See Page
ENG-08-01-NSB	<ul style="list-style-type: none"> <li>• <i>NSB Operator's Handbook</i></li> <li>• NSB Manufacturer Manuals</li> <li>• <i>Boat Crew Seamanship Manual</i>, COMDTINST M16114.5 (series), Chapter 8, Section E</li> </ul>	3-61
ENG-08-02-NSB	<ul style="list-style-type: none"> <li>• <i>NSB Operator's Handbook</i></li> <li>• NSB Manufacturer Manuals</li> <li>• <i>Boat Crew Seamanship Manual</i>, COMDTINST M16114.5 (series), Chapter 8, Section D</li> </ul>	3-63
ENG-08-03-NSB	<ul style="list-style-type: none"> <li>• <i>NSB Operator's Handbook</i></li> <li>• NSB Manufacturer Manuals</li> <li>• <i>Coast Guard Boat Readiness and Standardization Program Manual</i>, COMDTINST M16114.24 (series)</li> </ul>	3-65
ENG-08-04-NSB	<ul style="list-style-type: none"> <li>• <i>NSB Operator's Handbook</i></li> <li>• NSB Manufacturer Manuals</li> <li>• <i>Boat Crew Seamanship Manual</i>, COMDTINST M16114.5 (series), Chapter 1, Appendix 1-A</li> </ul>	3-66
ENG-08-05-NSB	<ul style="list-style-type: none"> <li>• <i>NSB Operator's Handbook</i></li> <li>• NSB Manufacturer Manuals</li> </ul>	3-67
ENG-08-06-NSB	<ul style="list-style-type: none"> <li>• <i>NSB Operator's Handbook</i></li> <li>• NSB Manufacturer Manuals</li> </ul>	3-68



Task Number	Reading Assignment	See Page
ENG-08-07-NSB	<ul style="list-style-type: none"> <li>• <i>NSB Operator's Handbook</i></li> <li>• NSB Manufacturer Manuals</li> <li>• <i>Boat Crew Seamanship Manual, COMDTINST M16114.5 (series), Chapter 8, Section E</i></li> </ul>	3-68
ENG-08-08-NSB	<ul style="list-style-type: none"> <li>• <i>NSB Operator's Handbook</i></li> <li>• NSB Manufacturer Manuals</li> <li>• <i>Boat Crew Seamanship Manual, COMDTINST M16114.5 (series), Chapter 8, Section E</i></li> </ul>	3-68
ENG-08-09-NSB	<ul style="list-style-type: none"> <li>• <i>NSB Operator's Handbook</i></li> <li>• NSB Manufacturer Manuals</li> <li>• <i>Boat Crew Seamanship Manual, COMDTINST M16114.5 (series), Chapter 8, Section E</i></li> <li>• <i>Boat Crew Seamanship Manual, COMDTINST M16114.5 (series), Chapter 18</i></li> </ul>	3-69
ENG-08-10-NSB	<ul style="list-style-type: none"> <li>• <i>NSB Operator's Handbook</i></li> <li>• NSB Manufacturer Manuals</li> </ul>	3-71

## **TASK ENG-08-01-NSB:      Locate Components and Accessories for the NSB Propulsion and Associated Systems**

---

1. The main engine(s) in this non-standard boat is/are a \_\_\_\_\_ (Manufacturer, Model).
  2. State the following specifications for the engine:
    - a. \_\_\_\_\_ Horsepower
    - b. \_\_\_\_\_ Number of cylinders
    - c. \_\_\_\_\_ Stroke (2-stroke or 4-stroke cycle)
    - d. \_\_\_\_\_ Oil capacity
    - e. \_\_\_\_\_ Outboard oil system (if equipped)
    - f. \_\_\_\_\_ Model of outdrive and manufacturer
  3. State the location of the fuel tank(s) and capacity at 95 percent.
  4. State the type of engine cooling water system for the assigned NSB.
  5. State the location of the following components on the engine:
    - a. Alternator
    - b. Freshwater reservoir/expansion tank
    - c. Oil level dipstick
    - d. Fuel pump
    - e. Throttle control connection
    - f. Oil fill cap
    - g. Raw water (seawater) pump
    - h. Oil filter
    - i. Fuel filter(s)
    - j. Glow plugs (if installed)
    - k. Hot start system (if installed)
    - l. Engine coolant heat exchanger
    - m. Turbocharger (if installed)
    - n. Oil cooler (if installed)
    - o. Intercooler (if installed)
  6. State the *idle* and *cruising* readings for the following gauges:
    - a. Engine lube oil pressure
    - b. Engine coolant temperature
    - c. Marine gear oil pressure (if installed)
    - d. Boost pressure (if installed)
    - e. Engine RPM at *idle/cruising*
-



- 
7. State the location of installed seawater strainers and seachest suction valves.
  8. Describe the DC electrical system on your craft and state the location of the following components:
    - a. Batteries
    - b. Battery charger
    - c. Shore power connector
    - d. Battery switch and indicator
    - e. Essential breakers and switches
  9. Describe the boat's propeller system.
  10. Describe the boat's steering system. Include all major components. State how to fill and purge the system.
  11. Describe the cathodic protection system installed in the assigned NSB.
  12. Describe what is used to protect the engine cooling water system from corrosion.
  13. State the type of coolant, oil or lubricant required for the engine, outdrive, outboard and steering system.
  14. State the function of the engine kill switch used on the NSB.
-

**TASK ENG-08-02-NSB:      Locate Installed Equipment and Fittings on the NSB**

---

1. Locate and state the purpose of the following:
    - a. Navigation lights (color and location)
    - b. Spot lights or searchlights
    - c. Deck fittings (cleats, chocks, bitts, lifting eyes)
    - d. Anchor, anchor line (if equipped)
    - e. Lanyard for engine kill switch
    - f. Electric and manual bilge pumps
    - g. Inflatable collar fittings (if equipped)
  2. Describe the location and purpose of the following communications/navigation equipment:
    - a. GPS or DGPS
    - b. Surface radar
    - c. Fathometer (location of transmitter)
-



- d. Loudhailer control and speakers
  - e. UHF radios
  - f. VHF radios
  - g. Installed onboard intercom system (if equipped)
  - h. EPIRB
  - i. Standby compass (magnetic compass)
-

**TASK ENG-08-03-NSB:      List the Disabling Casualties and Restrictive Discrepancies that Prevent the NSB from Getting Underway**

---

1. A disabling casualty is a casualty that makes the boat \_\_\_\_\_.
2. Define the term restrictive discrepancy.

3. Describe what actions must be taken if a disabling casualty occurs while underway.

4. Give some examples of major discrepancies for an assigned NSB.

5. State what must be done if a restrictive discrepancy occurs while underway or dockside.

6. List three restrictive discrepancies for an assigned NSB.

- a.
- b.
- c.

7. List three disabling casualties for an assigned NSB.

- a.
  - b.
  - c.
-



## **TASK ENG-08-04-NSB:      Conduct a Pre-Start Check-Off on the NSB**

---

1. The fuel tanks should be at or near \_\_\_\_\_ percent during pre-start checks.
  2. State the correct procedure for disconnecting the shore power cable.
  3. State the coolant, fluid, lubricant or lubricating oil level that must be checked prior to NSB operation.
  4. Check engine drive belt tension. No greater than \_\_\_\_\_ inch deflection per foot of span is allowed.
  5. The engine steering and throttle controls should be checked for \_\_\_\_\_.
  6. Visually inspect the \_\_\_\_\_ filter for the presence of sediment and water.
  7. Ensure the \_\_\_\_\_ suction valve is open.
  8. With the engine cool or cold, state the location and level for the engine coolant system.
  9. State why the engine should not be operated with the shore power system energized.
  10. State the location (side of engine, near) of the engine oil dipstick for the assigned NSB.
-



## **TASK ENG-08-05-NSB:      Start the NSB**

---

1. State the location and purpose of the engine kill switch (if equipped).
  
  2. The throttle should be in \_\_\_\_\_ prior to engaging the starter.
  3. The *start* button should be depressed for \_\_\_\_\_ seconds. If the engine fails to start, release the button and wait \_\_\_\_\_ seconds before attempting another start.
  4. State the location of the raw water (seawater) overboard discharge for engine cooling.
  
  5. At idle, the oil pressure gauge should read at or above \_\_\_\_\_ PSI.
  6. At idle, the engine RPM should be approximately \_\_\_\_\_ RPM.
  7. State what visual checks should be conducted on the engine prior to getting the boat underway.
  
  8. State any procedures for energizing the installed communications/navigation equipment.
-



---

**TASK ENG-08-06-NSB:            Secure the NSB After Operations**

---

1. The engine should be allowed to *idle* \_\_\_\_\_ to \_\_\_\_\_ minutes prior to securing.
  2. Prior to stopping the engine, secure all \_\_\_\_\_ except for the main DC power switch.
  3. Once the engine is stopped, trim or tilt the outdrive into the \_\_\_\_\_ position.
  4. Refill the fuel tank(s) to \_\_\_\_\_ percent.
  5. Once shore power is energized, the \_\_\_\_\_ and \_\_\_\_\_ should be turned on.
  6. If necessary, when the boat is installed in a trailer or boat davit cradle, it may be necessary to \_\_\_\_\_ the engine(s).
- 

---

**TASK ENG-08-07-NSB:            Engine will not Turn Over or Start**

---

1. State the location of the engine kill switch and in what position it should be prior to start.
  2. What is the normal battery voltage for the assigned NSB and where can it be read?
  3. Where is the engine starter located?
  4. Describe (if applicable) how to prime the engine fuel system for the assigned NSB.
  5. If outside temperature is below freezing, state what systems might need to be energized to start the NSB.
- 

---

**TASK ENG-08-08-NSB:            Engine Running Uneven or Stalls**

---

1. Check the fuel system \_\_\_\_\_ alignment if the engine runs uneven or stalls.
  2. Check the \_\_\_\_\_ for visual contamination.
  3. Check the \_\_\_\_\_ linkage at the \_\_\_\_\_ for security and worn or missing hardware.
  4. Verify the \_\_\_\_\_ level.
  5. Verify the \_\_\_\_\_ intake system for obstructions.
-

## **TASK ENG-08-09-NSB:      Basic Casualty Response**

---

1. State three actions that should be taken in the event of a steering casualty.
    - a.
    - b.
    - c.
  2. State three actions that must be taken if the NSB strikes a submerged object or runs temporarily aground.
    - a.
    - b.
    - c.
  3. Check for actions that should be taken in response to the following casualties:
    - a. High cooling water (freshwater) temperature
    - b. Loss of engine oil pressure
    - c. Unusual engine outdrive or outboard vibration
    - d. Loss of engine control (fails to engage in *forward* or *reverse*)
  4. State all the actions that must be taken and considerations that must be evaluated if a fire occurs onboard.
  5. If equipped, demonstrate the rigging and deploying of the anchor if required by any casualty.
-



- 
6. Describe what action should be taken in regards to re-starting the boat if the coxswain of an NSB falls overboard or is ejected from the craft.
-

**TASK ENG-08-10-NSB:      Draw the NSB Systems**

---

1. Draw the following NSB systems and label all components:

a. Fuel oil system (tank to engine)

b. Raw water (seawater) cooling system

---



---

c. Freshwater cooling system

d. Steering system



- 
- e. Electrical system(s), AC and DC (include shore power interface)
-





## Appendix A. Task Accomplishment Record for Engineer

**NOTE**

Instructor should remove this section and place it in the trainee's training record.

TRAINEE NAME: \_\_\_\_\_ RATE: \_\_\_\_\_

INSTRUCTOR NAME: \_\_\_\_\_ RATE: \_\_\_\_\_

POSITION/QUALIFICATION CODE TO BE TRAINED FOR: \_\_\_\_\_

**NOTE**

Instructors should line through those tasks not applicable to this qualification.

Task	Date Started	Date Completed	Instructor's Initials
ENG-01-01-41UTB			
ENG-01-02-41UTB			
ENG-01-03-41UTB			
ENG-01-04-41UTB			
ENG-01-05-41UTB			
ENG-01-06-41UTB			
ENG-01-07-41UTB			
ENG-01-08-41UTB			
ENG-01-09-41UTB			
ENG-01-10-41UTB			
ENG-01-11-41UTB			
ENG-01-12-41UTB			
ENG-01-13-41UTB			



Appendix A – Task Accomplishment Record for Engineer

<b>Task</b>	<b>Date Started</b>	<b>Date Completed</b>	<b>Instructor's Initials</b>
ENG-01-14-41UTB			
ENG-02-01-47MLB			
ENG-02-02-47MLB			
ENG-02-03-47MLB			
ENG-02-04-47MLB			
ENG-02-05-47MLB			
ENG-02-06-47MLB			
ENG-02-07-47MLB			
ENG-02-08-47MLB			
ENG-02-09-47MLB			
ENG-02-10-47MLB			
ENG-02-11-47MLB			
ENG-02-12-47MLB			
ENG-02-13-47MLB			
ENG-02-14-47MLB			
ENG-02-15-47MLB			
ENG-02-16-47MLB			
ENG-02-17-47MLB			
ENG-02-18-47MLB			
ENG-02-19-47MLB			



<b>Task</b>	<b>Date Started</b>	<b>Date Completed</b>	<b>Instructor's Initials</b>
ENG-02-20-47MLB			
ENG-02-21-47MLB			
ENG-02-22-47MLB			
ENG-03-01-44MLB			
ENG-03-02-44MLB			
ENG-03-03-44MLB			
ENG-03-04-44MLB			
ENG-03-05-44MLB			
ENG-03-06-44MLB			
ENG-03-07-44MLB			
ENG-03-08-44MLB			
ENG-03-09-44MLB			
ENG-03-10-44MLB			
ENG-03-11-44MLB			
ENG-03-12-44MLB			
ENG-03-13-44MLB			
ENG-03-14-44MLB			
ENG-03-15-44MLB			
ENG-03-16-44MLB			
ENG-03-17-44MLB			



Appendix A – Task Accomplishment Record for Engineer

<b>Task</b>	<b>Date Started</b>	<b>Date Completed</b>	<b>Instructor's Initials</b>
ENG-04-01-30SPC			
ENG-04-02-30SPC			
ENG-04-03-30SPC			
ENG-04-04-30SPC			
ENG-04-05-30SPC			
ENG-04-06-30SPC			
ENG-04-07-30SPC			
ENG-04-08-30SPC			
ENG-04-09-30SPC			
ENG-04-10-30SPC			
ENG-04-11-30SPC			
ENG-04-12-30SPC			
ENG-05-01-49BUSL			
ENG-05-02-49BUSL			
ENG-05-03-49BUSL			
ENG-05-04-49BUSL			
ENG-05-05-49BUSL			
ENG-05-06-49BUSL			
ENG-05-07-49BUSL			
ENG-05-08-49BUSL			



<b>Task</b>	<b>Date Started</b>	<b>Date Completed</b>	<b>Instructor's Initials</b>
ENG-05-09-49BUSL			
ENG-05-10-49BUSL			
ENG-05-11-49BUSL			
ENG-05-12-49BUSL			
ENG-05-13-49BUSL			
ENG-05-14-49BUSL			
ENG-05-15-49BUSL			
ENG-06-01-55ANB			
ENG-06-02-55ANB			
ENG-06-03-55ANB			
ENG-06-04-55ANB			
ENG-06-05-55ANB			
ENG-06-06-55ANB			
ENG-06-07-55ANB			
ENG-06-08-55ANB			
ENG-06-09-55ANB			
ENG-06-10-55ANB			
ENG-06-11-55ANB			
ENG-06-12-55ANB			
ENG-06-13-55ANB			



Appendix A – Task Accomplishment Record for Engineer

<b>Task</b>	<b>Date Started</b>	<b>Date Completed</b>	<b>Instructor's Initials</b>
ENG-06-14-55ANB			
ENG-06-15-55ANB			
ENG-06-16-55ANB			
ENG-06-17-55ANB			
ENG-07-01-TPSB			
ENG-07-02-TPSB			
ENG-07-03-TPSB			
ENG-07-04-TPSB			
ENG-07-05-TPSB			
ENG-07-06-TPSB			
ENG-07-07-TPSB			
ENG-07-08-TPSB			
ENG-07-09-TPSB			
ENG-07-10-TPSB			
ENG-07-11-TPSB			
ENG-07-12-TPSB			
ENG-07-13-TPSB			
ENG-07-14-TPSB			
ENG-07-15-TPSB			
ENG-07-16-TPSB			



<b>Task</b>	<b>Date Started</b>	<b>Date Completed</b>	<b>Instructor's Initials</b>
ENG-08-01-NSB			
ENG-08-02-NSB			
ENG-08-03-NSB			
ENG-08-04-NSB			
ENG-08-05-NSB			
ENG-08-06-NSB			
ENG-08-07-NSB			
ENG-08-08-NSB			
ENG-08-09-NSB			
ENG-08-10-NSB			



## Appendix A – Task Accomplishment Record for Engineer



## Appendix B. List of Acronyms

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**Introduction** This appendix contains a list of the acronyms used throughout the handbook.

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**In this appendix** This appendix contains the following information:

Topic	See Page
List of Acronyms	B-3

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ACRONYM	DEFINITION
ANB	Aids to Navigation Boat
ASB	Arctic Survey Boat
ATB	Aviation Training Boat
BU	Buoy Boat
BUSL	Buoy Utility Stern Loading
CB-L	Cutter Boat-Large
CB-M	Cutter Boat-Medium
CB-OTH	Cutter Boat - Over the Horizon
CB-S	Cutter Boat-Small
CSIM	Control Station Interface Module
DDEC	Detroit Diesel Electronically Controlled
DGPS	Differential Global Positioning System
DPB	Deployable Pursuit Boat
ECM	Electronic Control Module
EDM	Electronic Display Module
EGIM	Electronic Gear Interface Module
ERIM	Engine Room Interface Module
GPS	Global Positioning System
HPU	Hydraulic Power Unit
HVAC	Heating, Ventilation, and Air Conditioning
IMARV	Independent Maritime Response Vessel
LCVP	Landing Craft
MCB	Motor Cargo Boat
MIM	Marine Interface Module
MLB	Motor Lifeboat
MSB	Motor Surf Boat
MSB	Motor Surf Boat
NMLBS	National Motor Lifeboat School
NSB	Non-Standard Boat
PTO	Power Take-Off
PWB	Port and Waterways Boat
SB	Sailboat



ACRONYM	DEFINITION
SKF	Skiff
SPC	Special Purpose Craft
SPC (LE)	Law Enforcement Special Purpose Craft
SRS	Synchronous Reference Sensor
SSL	Standard Support Level
TANB	Trailerable AtoN Boat
TPSB	Transportable Port Security Boat
TRS	Timing Reference Sensor
UMI	Universal Marine Interface
UTB	Utility Boat
UTL	Utility Boat Light
UTM	Utility Boat Medium
VRO	Variable Ratio Oiler



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